RACE for 2030

Scenarios for Future Living

HOUSEHOLD AND HOME BUSINESSES RESEARCH:

EMERGING LIFESTYLES, PREFERENCES AND PRACTICES

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SCENARIOS FOR FUTURE LIVING
Putting people at the centre of the energy transition

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Industry Report

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Project team

Research partner

- Monash University
- University of New South Wales
- University of Technology Sydney
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Industry partners

- Ausgrid
- CitiPower/Powercor/United Energy
- Red Energy
- NSW Department of Climate Change, Energy, the Environment and Water
- VIC Department of Energy, Environment, and Climate Action

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Acknowledgement of Country

The authors of this report would like to respectfully acknowledge the Traditional Owners of the ancestral lands throughout Australia and their connection to land, sea and community. We recognise their continuing connection to the land, waters and culture and pay our respects to them, their cultures and to their Elders past, present, and emerging.

What is RACE for 2030?

RACE for 2030 CRC is a 10-year cooperative research program with AUD350 million of resources to fund research towards a reliable, affordable, and clean energy future.

Disclaimer

The authors have taken all reasonable care to ensure that the information in this report was accurate at the time of publication. However, they accept no responsibility for any loss or damage that may result from reliance on its contents.

CONTENTS

GLOSSARY OF TERMS

ABS (Australian Bureau of Statistics)
The national statistical agency that provides official demographic, economic, and social data. Used as a benchmark for weighting survey responses.

Automation (of appliances)
The process by which appliances automatically operate according to pre-set schedules or signals (e.g. electricity price, solar availability), with or without user override.

CER (Consumer Energy Resources)
Small-scale energy technologies owned or operated by households, such as rooftop solar panels, home batteries, and electric vehicles (EVs). These resources play a growing role in Australia's energy transition.

Climate risk areas
Geographic areas exposed to climate-related hazards such as bushfires, floods, storms, coastal inundation, or frequent blackouts.

DEF (Digital Energy Futures)
A Monash University-led research project (2019—2023) that explored how households engage with digital and energy technologies, forming the basis for Scenarios for Future Living (SFL). DEF was an Australian Research Council Linkage project (LP180100203) delivered in partnership with Ausgrid, AusNet Services and Energy Consumers Australia.

DSM (Demand-side management)
Programs or strategies that encourage households to adjust their energy use, either reducing consumption during peak demand or increasing it during periods of solar abundance, to help stabilise the grid.

Demand response
A form of DSM in which households alter their energy use in response to signals such as time-based pricing, financial incentives, or requests from energy providers.

Energy-related hardship
Difficulties households face in paying energy bills or maintaining adequate energy use, which may lead to cutting back on essentials, entering hardship programs, or facing disconnection.

EV (Electric Vehicle)
A car powered by electricity, either fully battery-electric or plug-in hybrid (which combines electricity with petrol/diesel). Future uptake is expected to significantly influence household and grid energy use.

FHD (Future Home Demand)
The Future Home Demand project was a research collaboration between Monash University and CitiPower, Powercor, and United Energy, designed to anticipate energy and everyday life trends across the networks.

Living lab experiments
Research activities where households test prototype energy technologies and services in real-world settings to evaluate usability and impact.

Peak demand
Times of highest energy use across the grid (e.g. hot summer afternoons when many people use air conditioning). Managing peak demand is critical for grid stability.

PV (Photovoltaics / Rooftop Solar)
Solar panels installed on rooftops that convert sunlight into electricity for household or grid use.

GLOSSARY OF TERMS

RACE for 2030 (Reliable Affordable Clean Energy CRC)
A Cooperative Research Centre that funds collaborative research on Australia's energy transition, including the SFL project.

Shifting energy use
Changing the timing of household energy activities (e.g. running the dishwasher at midday instead of in the evening) to better align with solar availability or reduce pressure during peak demand.

Smart appliances
Home appliances capable of automated or remote operation, often designed to optimise energy use based on grid conditions, electricity prices, or household routines.

Solar abundance
Periods when solar generation is very high (often in the afternoon), creating opportunities for households to increase energy use (e.g. charging EVs) to balance supply and demand.

SFL (Scenarios for Future Living)
The SFL project is part of the RACE (Reliable Affordable Clean Energy) for 2030 Cooperative Research Centre. SFL is a collaborative project across 4 research partners: Monash University, University of New South Wales (UNSW), University of Technology Sydney (UTS), and Commonwealth Scientific and Industrial Research Organisation (CSIRO) and key industry partners Ausgrid, CitiPower, Powercor, United Energy, Red Energy, Department of Climate Change, Energy, the New South Wales Environment and Water of New South Wales (NSW DCCEEW), and the Victorian Department of Energy, Environment and Climate Action (VIC DEECA).

V2G (Vehicle-to-Grid)
A technology that allows EVs to not only draw power from the grid but also return stored energy to the grid during times of high demand.

VPP (Virtual Power Plant)
A network of distributed energy resources (such as rooftop solar and home batteries) coordinated through digital platforms to act as a single power source that supports the grid.

WFH (Work from home)
A flexible working arrangement in which employees perform their job duties remotely from their residence, rather than commuting to a traditional office or workplace.

EXECUTIVE SUMMARY

This report presents findings from the first national Scenarios for Future Living (SFL) household survey, completed by more than 5,000 Australians in April—May 2025.

The survey explores how emerging social trends, lifestyle shifts, and evolving household routines are shaping technology use in the home and the implications for future energy demand.

The survey builds on trends identified in the Digital Energy Futures and Future Home Demand projects conducted by Monash University's Emerging Technologies Research Lab. The survey design was also informed by extensive stakeholder consultation across research and industry partners.

It was administered by the professional agency Instinct & Reason and weighted to 2021 ABS Census benchmarks to ensure representativeness of the Australian population. While subject to the usual limitations of online research, the dataset provides robust, nationally representative insights into current and emerging household energy practices.

Key features of the methodology include

- Online survey of 5,012 participants, completed in 15 minutes on average, with industry-standard incentives.
- Weighting applied for age, gender, state, and metro/regional location to improve generalisability.
- Statistical analysis using descriptive methods and Pearson chi-square tests to identify significant associations and effect sizes.

This survey was administered prior to the launch of the Australian Government's Cheaper Home Batteries Program. Early market data shows rapid uptake of batteries under the scheme, suggesting household solar and storage may soon exceed what was found in this dataset. However, current regulator data captures only uptake, system configurations, and postcodes, not the household characteristics that shape who benefits most and who risks exclusion. Future SFL surveys will help close this gap.

Who should use these findings

These findings show how everyday practices, values, and vulnerabilities shape household energy demand and participation in Australia's energy transition. They offer critical foresight for Distribution Network Service Providers (DNSPs), retailers, policymakers, regulators, and consumer advocates—offering evidence on a range of current and future trends that are integral to enabling household participation in Australia's energy transition. By understanding these trends, stakeholders can better forecast demand, design fair and desirable products and services, guide policy and regulation, and advocate for equitable consumer outcomes, particularly for vulnerable households.

SUMMARY OF KEY FINDINGS

Section 1: Consumer energy resources (CER): homeownership, household type, and income matter

ROOFTOP SOLAR: GROWTH AMID PERSISTENT INEQUITIES

- Around half of owner-occupiers reported currently using rooftop solar, compared to 18% of renters/government-assisted; use rose with income (29% of <$40k to 51% of >$241k).
- Families reported the highest use (44—46%), while one-person and shared households were most likely to have no plans to install solar. Detached houses led (46%), while only 19% of apartment residents currently used solar, with nearly half (43%) reporting no plans.
- There were high levels of current use across all ages, especially older groups, but stronger future plans among younger age groups.
- **A persistent access gap suggests solar uptake is shaped less by willingness and more by feasibility, affordability, and control over housing.**

HOME BATTERIES: UPTAKE CURRENTLY LOW, FUTURE PROSPECTS STRONG

- Current use was highest among aged care and co-op households and lowest among renters (7%), with renters and social housing residents most likely to have no plans to purchase (51—55%).
- Families, especially couples with children, reported the highest use (17%) and intent (43%), while one-person, couples without children and group households were most likely to have no plans to acquire a battery (46—57%).
- Use rose with income (9% <$40k to 26% >$241k), with the strongest intent among mid-to-high incomes (>40% planning above $120k).
- Detached and townhouse residents showed the strongest future intent, while apartment residents had the highest "no plans" (49%).
- Under-45s led in current use and future plans of home batteries, but a majority of over-65s reported no plans to own one.
- Among households planning installation in the next 5 years (19%), selecting from a diverse range of future planned strategies, most intended to maximise solar use (77%) and minimise costs (68%).
- **Targeted interventions are needed to ensure that battery storage and its associated flexibility and resilience benefits are accessible to specific household types.**

Section 1: Consumer energy resources (CER): homeownership, household type, and income matter

ELECTRIC VEHICLES (EVS) AND PLUG-IN HYBRIDS: AFFORDABILITY MATTERS, HOUSING LESS SO, WHILE HOME CHARGING IS KEY

- Residents in cooperative housing and aged care reported the strongest current use and planned future ownership of EVs, although these groups represented very small sample sizes.
- Of traditional housing tenures, EV use was highest among mortgaged owners (12%) and lowest among renters (5%). Government-supported and renter households were most likely to have no plans to purchase EVs.
- Couples with children reported the highest current use (15%) and future intent (41%), while one-person and "other" households had the highest rates of no plans (64–72%).
- Use rose with income (4% <$40k to 22% >$241k); future intent was strongest among mid-to-high incomes ($161k–$240k, 45%).
- Apartments and semi-detached homes showed the highest use (11%) and strong future intent, while "other" dwellings reported the lowest (1% currently use; 76% no plans).
- Current use of EVs peaked among younger groups, while older groups mostly reported no plans to own one.
- Most current and prospective EV households preferred home-based charging, particularly least-cost options such as solar or off-peak electricity (31%).
- **While interest in EVs is growing, widespread use remains constrained by affordability and infrastructure access.**

Photo by Zaptec on Unsplash

SUMMARY OF KEY FINDINGS

Section 2: Demand-side management (DSM) and household routines: home business and working from home (WFH) households present opportunities for DSM initiatives

WORKING FROM HOME (WFH): FIFTY-FOUR PER CENT OF HOUSEHOLDS HAD AT LEAST ONE MEMBER WFH

- One-third worked from home part of the week, and 18% did so 5+ days.
- WFH households were more likely to report mid-to-high electricity bills.
- **WFH households present opportunities for DSM initiatives to target daytime flexibility (e.g. shifting appliance use into the solar window).**

HOME BUSINESSES: 21% OF HOUSEHOLDS OPERATED A BUSINESS FROM HOME

- These households reported higher bills, with 20% paying $601—$1200 (vs. 11% of non-home-business households).
- **DSM programs may consider home businesses higher-potential candidates for tailored support, cost-saving measures, or demand flexibility initiatives.**

DEMAND FLEXIBILITY ON A HOT SUMMER'S DAY: MANY HOUSEHOLDS LACK FIXED ROUTINES

- Many households reported no consistent pattern for energy-intensive tasks on hot days.
- Air conditioning peaked in the late afternoon (27%), cooking in the evening (51%), washing machines (31%) and pool pumps (25%) in the solar window, and EV charging overnight (30%).
- **DSM programs should continue targeting activities already perceived as flexible on hot days.**

WILLINGNESS TO INCREASE USE DURING SOLAR ABUNDANCE: INCENTIVES MOST EFFECTIVE, BUT COMMUNITY MATTERS

- One-third of households were willing to increase energy use during solar abundance with financial incentive (31%), 26% for community benefit, and 13% without incentive; 18% were unwilling.
- Mortgaged owners and families with children were most interested, while renters, social housing, and one-person and "other" households showed more hesitancy.
- Higher-income and higher-bill households were more likely to indicate participation than lower-income and low-bill households.
- **DSM programs aimed at increasing use during solar abundance can broaden participation by aligning incentives with household circumstances.**

Section 2: Demand-side management (DSM) and household routines: home business and working from home (WFH) households present opportunities for DSM initiatives

DEMAND FLEXIBILITY: HOUSEHOLDS OPEN TO SHIFTING APPLIANCE USAGE BUT RESISTANT TO MOVING CORE ROUTINES

- Households saw pool pumps (68%), dishwashers (66%), washing machines (65%), clothes dryers (64%), and EV charging (58%) as easier to shift, while showering (37%), cooking (36%), and air conditioning (25%) were hardest.
- The most common reason for not shifting was not being home during the day, followed by convenience and competing priorities.
- **DSM strategies should account for these differences when designing and communicating programs.**

PEAK DEMAND REDUCTION: MOST HOUSEHOLDS ENGAGED BY PRACTICAL AND SOCIAL CONSIDERATIONS RATHER THAN NOVELTY

- Financial incentives were the strongest motivator (26%), followed by environmental concern (16%) and preventing outages (15%). Supporting vulnerable households and grid stability was also meaningful.
- **DSM programs should blend financial rewards with community and environmental benefits to broaden appeal.**

HOUSEHOLD VALUES: AFFORDABILITY, COMFORT, HEALTH AND SAFETY ARE TOP PRIORITIES

- Affordability (26%) and comfort, health and safety (26%) outweighed convenience (8%) and sustainability (7%) as key household values.
- **Aligning DSM programs with household priorities and values of affordability, comfort, health and safety provides opportunities for increasing participation and desired outcomes.**

Photo by Everett Pachmann on Unsplash

SUMMARY OF KEY FINDINGS

Section 3: Future smart appliance automation and V2G: connected futures

SMART APPLIANCES: DESIRE FOR MANUAL CONTROL SHAPES AUTOMATION FUTURES

- Most households were open to some form of automation, but the vast majority (84%) indicated they want to retain some form of control or override over future smart appliances. This included the 17% of households who would not use smart systems at all.
- Only 12% preferred automation without override.
- **While households were generally open to automation, a clear majority valued the ability to retain control. It is important to anticipate how override features in future automation policies, programs, and appliance designs will materially impact the grid.**

EV HOUSEHOLDS AND V2G PARTICIPATION: MAJORITY RECEPTIVE, BUT LINKED TO CONTROL PREFERENCES

- Among current and prospective EV owners, 69% were at least somewhat willing to allow third-party control for V2G (43% somewhat willing, 26% very willing).
- However, willingness varied with automation preferences:
  - Households preferring full control over smart appliances were least supportive (22% very willing, 23% not willing).
  - Those comfortable with automation without override were most supportive (46% somewhat, 33% very willing).
- **Recognising that smart tech rejection correlates with V2G resistance, tailored engagement or opt-in schemes may be more effective than default or mandatory approaches.**

OVERRIDING AUTOMATION: SAFETY, COMFORT, AND HEALTH AS KEY PRIORITIES

- Among households favouring automation with manual override, the most common reasons to take control included extreme weather or emergencies (72%), health issues (70%), travel (69%), hot weather (67%), holidays (57%), and hosting guests (53%).
- **Including override features in V2G policy and program design may increase participation. However, it is crucial to anticipate, plan and prepare for what this may mean in practice for grid stability during locally or nationally coordinated events and emergencies (e.g. extreme weather events or significant holidays).**

Section 4: Hardship and access inequities: weak points for resilience

ENERGY-RELATED HARDSHIP: CONCENTRATED AMONG YOUNGER, LOWER-INCOME, AND DISADVANTAGED HOUSEHOLDS

- Over 1 in 3 households reported hardship in the past year (38%), most commonly experienced as being unable to afford essentials (15%) or pay electricity bills on time (13%).
- The likelihood of experiencing at least one of the above forms of energy-related hardship decreased as age increased, with over half of 18—34-year-olds reporting hardship, compared with just 11% of those aged 75+.
- Hardship was highest among lower-income households (48% earning <$40k) and declined steadily with income (27% earning >$241k). One-parent households (57%) and residents of aged care (84%), cooperative (76%), and social/affordable housing (65%) reported the highest levels of hardship.
- Aboriginal and/or Torres Strait Islander households (66%) and households with a member with a disability (51%) also reported elevated hardship.
- **Energy hardship was heavily shaped by the interaction of income and housing tenure, affecting middle-income households just as much as low-income renters, demonstrating how energy stress can be linked to broader mortgage or housing cost stress.**

CLIMATE RISK AREAS: HARDSHIP COMPOUNDED BY EXPOSURE

- More than a third of households (36%) self-reported living in climate risk zones, most commonly bushfire (16%), flood (14%), or blackout-prone areas (13%).
- Hardship was more than twice as common among households in self-identified climate risk areas (54%) compared with those outside them (24%).
- **Climate change-induced risk is recognised by a significant proportion of Australian households and is increasing their hardship.**

Section 4: Hardship and access inequities: weak points for resilience

TECHNOLOGIES IN THE HOME: UNEVEN OWNERSHIP LIMITS OPPORTUNITIES TO PARTICIPATE IN DEMAND RESPONSE INITIATIVES, REDUCE ENERGY DEMAND, OR IMPROVE HEALTH AND COMFORT OUTCOMES

- Current ownership of the surveyed technologies was modest: induction cooktops (25%), heat pump hot water systems (23%), and energy monitoring apps (14%), while 12% of households had none of the listed technologies (e.g. refrigerated air conditioners, induction cooktops, double-glazed windows).
- Fewer than 10% of households intended to install any one technology in the next year, with air purifiers, smart appliances, and induction cooktops (each 9%) being the most cited. Nearly half (44%) planned no installations at all.
- **Technology-led demand management may be affected by low interest in and slow uptake of new energy technologies and smart appliances.**

COOLING: UNEQUAL ACCESS TO REFRIGERATED AIR CONDITIONING POSES GROWING RISKS WITH HOTTER SUMMERS

- While 56% of households reported having refrigerated air conditioning, renters (52%), government-assisted residents (64%), cooperative (68%), and aged care households (61%) were least likely to have it.
- Hardship households were less likely to have A/C (49%) than those not in hardship (61%), and the gap was starker in climate risk areas (46% vs 61%).
- **Inequalities in access to air-conditioning are likely to increase health and comfort inequities amidst rising summer temperatures.**

AIR QUALITY: MIXED CONCERNS, NATURAL VENTILATION PREFERRED

- Over half of households (57%) expressed concern about indoor air quality, most commonly allergens (31%), mould (29%), odours (22%), and health-related issues like germs (20%) or cooking pollutants (18%). Bushfire smoke was also a concern (14%).
- The most common way of managing air quality inside homes was natural ventilation, such as opening windows or doors (27%). This was followed by using ceiling fans (16%), closing windows or doors (15%), and using standalone air purifiers (12%).
- Fifty-seven per cent of all households reported concern about indoor air quality, rising in climate risk households (67%) and hardship households (71%). Concern peaked among those facing both challenges, three-quarters of whom worried about air quality.
- **Those with the greatest health risks are the least equipped with the technologies or resources to cope and create additional concerns during extreme weather events such as bushfires.**

PROJECT BACKGROUND

People are playing an increasingly central role in shaping the energy system through their use of consumer energy resources (CER) and digital technologies.

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It is uncertain how CER and digital technologies will be integrated into everyday life, and how changing household practices will affect the energy system — particularly amid climate disruptions and shifting lifestyles. Capturing and tracking household expectations and practices is essential for energy-sector planning and forecasting. Without such insights, modelling, policy and service design risk relying on partial or outdated assumptions.

The Scenarios for Future Living project

In order to create a more realistic and people-centred understanding of energy futures, the Scenarios for Future Living (SFL) project is:

- Expanding and refining future scenarios to better reflect people's evolving expectations and everyday lives.
- Developing modelling tools that help the energy industry prepare for local and national shifts in energy consumption and behaviour.
- Designing speculative products and services that align with or proactively shape these future scenarios.
- Building industry capacity by embedding foresighting methodologies into energy sector planning.

The SFL project is part of the RACE (Reliable Affordable Clean Energy) for 2030 Cooperative Research Centre. SFL is a collaborative project across four research partners: Monash University, University of New South Wales (UNSW), University of Technology Sydney (UTS), and Commonwealth Scientific and Industrial Research Organisation (CSIRO) and key industry partners Ausgrid, CitiPower, Powercor, United Energy, Red Energy, Department of Climate Change, Energy, the New South Wales Environment and Water of New South Wales (NSW DCCEEW), and the Victorian Department of Energy, Environment and Climate Action (VIC DEECA).

The SFL project comprises seven interconnected work packages (WP) addressing key challenges in Australia's energy transition. This report presents findings from a nationally representative survey conducted as part of WP1: Household and home business research.

WP1 includes:

- **Longitudinal ethnographic research** with 36-44 households across six states/territories over three years, ensuring diverse socio-demographic, geographic, and housing/technology representation.
- **Living lab experiments** where participants interact with prototype energy products and services, testing their usability, appeal, and real-world impact.
- **Ethnographic documentary video** showcasing real household experiences to engage industry, policymakers, and the public.
- **National household survey** (5,000+ participants) conducted three times over the project, capturing emerging lifestyle and energy trends (year 1 survey findings are reported here).
- **Collaboration with Energy Consumers Australia (ECA) and CSIRO**, integrating key survey questions to ensure whole-of-sector relevance.

The evidence will be used to generate real-world foresight into how diverse households and home-based businesses are likely to engage with energy in the future. These insights will shape the development of evolving scenarios for future living in WP3.

ABOUT THIS REPORT

This report presents the results from an online survey with 5000 respondents that was designed to investigate how emerging social trends, changing lifestyles, and evolving household routines are shaping the way Australians live with technology and the potential implications for future energy demand.

Who should use these findings

The findings highlight how people's everyday practices, values, and vulnerabilities are deeply intertwined with energy demand. They provide critical foresight for policymakers, regulators, and industry, offering evidence on a range of current and future trends that are critical for enabling household participation in Australia's energy transition.

While all energy industry stakeholders potentially benefit from understanding these trends, they are particularly relevant to:

- **Distributed Network Service Providers (DNSPs)**, who are forecasting residential demand into the future, anticipating CER uptake and use across different household types, and seeking new opportunities to manage demand.
- **Retailers**, who are creating differentiated and desirable products and services for diverse energy customers and seek to understand and anticipate their role in a future energy market with higher uptake of CER and changing lifestyle expectations.
- **Policy makers and government bodies**, who are anticipating future uptake and use of CER and other emerging technologies that are either responding to, or may require, policy intervention; and who seek to identify and address household inequities and vulnerabilities in the energy transition and in future living scenarios, particularly under climate change projections.
- **Regulators and market operators**, who are tracking current and future residential, technology and lifestyle trends that may require regulatory intervention and/or revised forecasts.
- **Consumer advocates**, who rely on rigorous evidence to identify and advocate for initiatives that deliver better outcomes for consumers both now and into the future, particularly for vulnerable consumers.

Method

The survey was developed by the SFL WP1 research team as an evolution of a survey conducted in the Digital Energy Futures (DEF) project conducted by Monash University between 2019 and 2023. The DEF survey comprised targeted futures questions integrated into ECA's Energy Consumer Behaviour Survey (ECBS) and was designed to quantify trends identified during ethnographic research with Australian households and track them over time. A subsequent iteration of the survey incorporated learnings from the Future Home Demand (FHD) project, a collaboration with CitiPower, Powercor, and United Energy. This version involved a standalone survey designed by Monash University researchers and distributed by the network businesses.

The survey design process involved ongoing consultation with stakeholders across the DEF, FHD and SFL projects, ensuring the survey remained relevant, robust and contextually grounded. Survey administration (23/04/2025–09/05/2025) was conducted by Instinct & Reason, a professional research agency. Participants were recruited from a well-established online panel and incentivised through a structured, points-based rewards system. These points could be redeemed for items such as gift cards, cash payments, or donations to charity. For completing the 15-minute online survey, participants received points in line with industry standards for similar surveys. A total of 5012 respondents were included in the final analysis.

To ensure representativeness, survey responses were weighted according to demographic benchmarks from the 2021 Australian Bureau of Statistics (ABS) Census. Weights were applied at the individual level based on key variables, including state, metropolitan or regional location, gender, and age.

This weighting process helps correct for sampling bias and enhances the generalisability of the findings to the broader Australian population.

Like all online surveys of this nature, possible biases in the sample include respondents who are more likely to be digitally literate, supportive of research and motivated by incentives.

Data analysis

Descriptive statistical analyses were conducted to describe the sample. Pearson chi-square tests were conducted to determine the significance of the association and its effect size and are reported in the footnote of the relevant figure. All percentages have been rounded to the nearest whole number.

The Cheaper Home Batteries Program

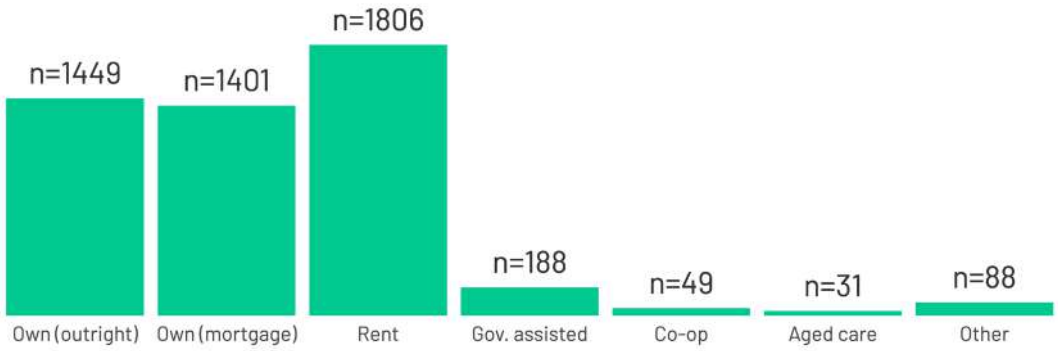
The survey was conducted prior to the introduction of the government's Cheaper Home Batteries Program. Early data from the Australian Government Clean Energy Regulator's recent Quarterly Carbon Market Report indicates that the program has made a strong start, with more than 55,000 applications submitted by Australian households and businesses since its commencement in July, of which nearly 41,000 have already been validated (CER 2025).

The Quarterly Carbon Market report also suggests that PV uptake is expected to accelerate beyond what may be inferred from these survey findings, partly because households may seek to maximise battery performance by pairing them with larger solar systems. While the Clean Energy Regulator publishes small-scale renewable energy installation data on a monthly basis, this data is limited to uptake volumes, capacity, and broad system configurations and does not capture household-level characteristics.

Without information on household attributes such as income, tenure, or dwelling type, it remains unclear who benefits most from these schemes and who may be at risk of being left behind. The next SFL survey, scheduled for next year, will provide an important dataset to examine the material impacts of this program, offering valuable insights into both current household battery use and future intentions to invest in home storage systems.

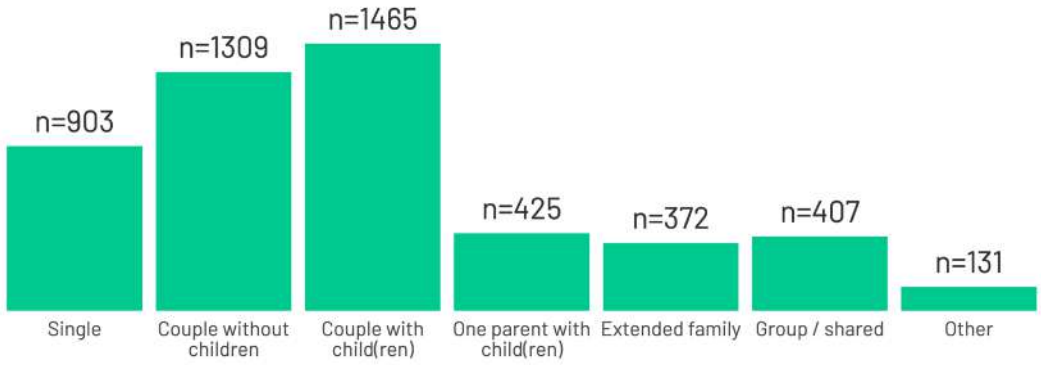
SOCIO-DEMOGRAPHIC OVERVIEW OF HOUSEHOLD RESPONDENTS[1]

Household tenure



Just over half of respondents owned their home, either outright (29%, n=1449) or with a mortgage (28%, n=1401). More than one-third were renters (36%, n=1806), while smaller proportions lived in government-assisted or social housing (4%, n=188), cooperative housing (1%, n=49), aged care (1%, n=31) or other arrangements (2%, n=88) such as boarding/paying board, retirement village/lifetime lease, living rent-free with family, house sitting/temporary arrangements, or church-owned or family-owned property (living without ownership).

Household occupant characteristics

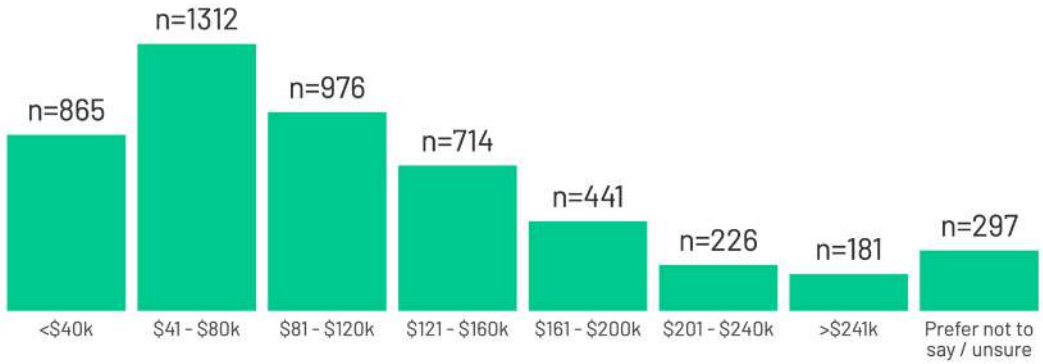


The largest household group was couples with children (36%, n=1465), followed by couples without children (32%, n=1309). Single-person households made up 18% (n=903), while one-parent households accounted for 10% (n=425). Extended families (9%, n=372), group/shared households (10%, n=407) and other living arrangements (3%, n=131) were also represented, such as empty nesters/couple whose children have left home, adult child living with parents, parents living with adult children, adult siblings living together, single adult with adult child, blended/complex family households and living with friends.

1 Unweighted results are reported here.

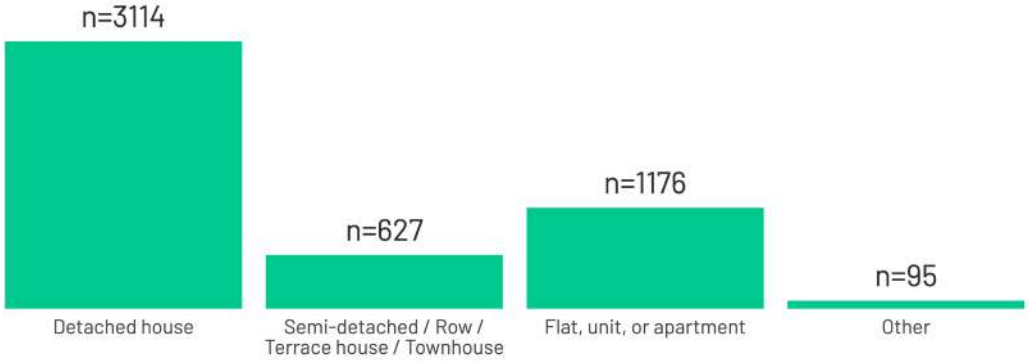
SOCIO-DEMOGRAPHIC OVERVIEW OF HOUSEHOLD RESPONDENTS

Annual household income



Income was distributed across all brackets. Around 17% reported incomes under $40,000 (n=865), while just over a quarter (26%, n=1312) earned $41,000–$80,999. Nearly one in five (20%, n=976) fell into the $81,000–$120,999 bracket, and 14% earned $121,000–$160,999 (n=714). Higher income groups above $161,000 collectively made up 17% (n=848), while 6% preferred not to say or were unsure (n=297).

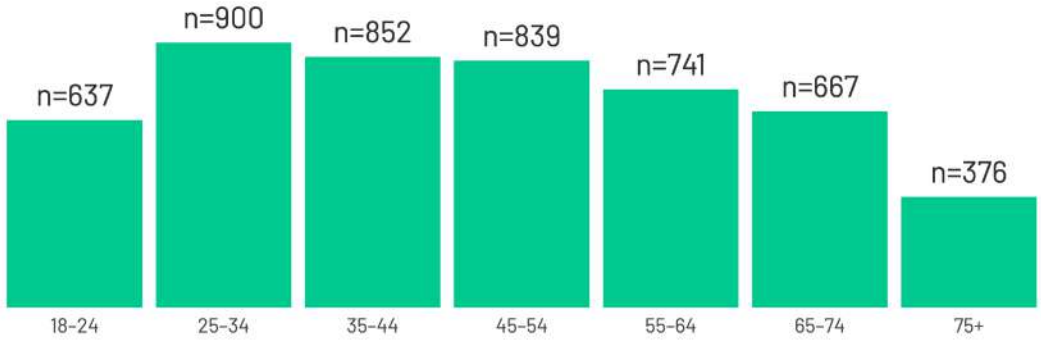
Dwelling type



Most respondents lived in detached houses (62%, n=3114). Apartments, flats, or units made up almost a quarter (24%, n=1176), while semi-detached or townhouse dwellings represented 13% (n=627). Only 2% (n=95) lived in other dwelling types such as caravans, granny flats, farm dwellings, dugouts (underground), and motorhomes.

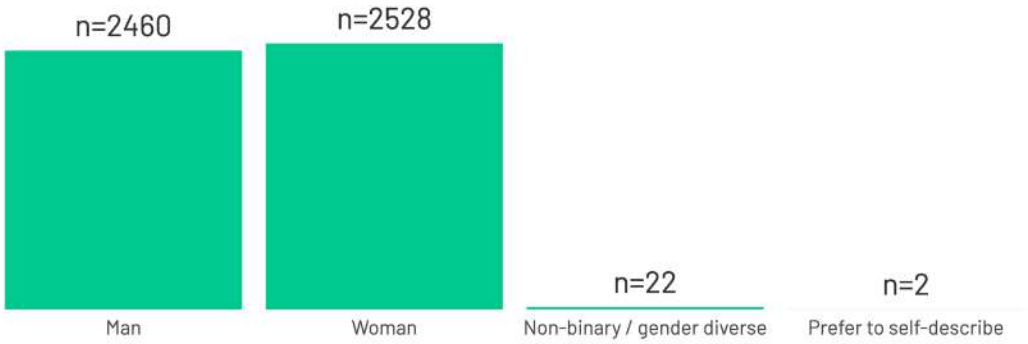
SOCIO-DEMOGRAPHIC OVERVIEW OF HOUSEHOLD RESPONDENTS

Age group



Respondents were spread across age groups, with the largest share aged 25–34 (18%, n=900). Similar proportions were in the 35–44 (17%, n=852), 45–54 (17%, n=839), and 55–64 (15%, n=741) brackets. Younger adults aged 18–24 made up 13% (n=637), while older groups 65–74 (13%, n=667) and 75+ (8%, n=376) were also well represented.

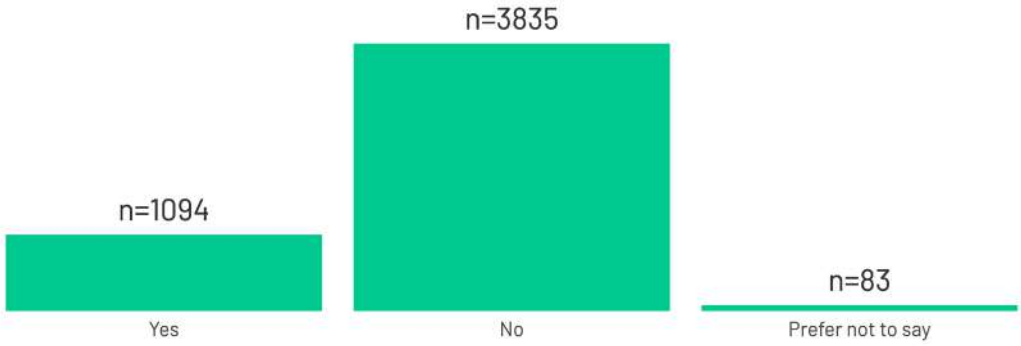
Gender



The sample was evenly split by gender, with 49% identifying as men (n=2460) and 50% as women (n=2528). A small proportion identified as non-binary or gender diverse (0.4%, n=22) or preferred to self-describe (0.04%, n=2).

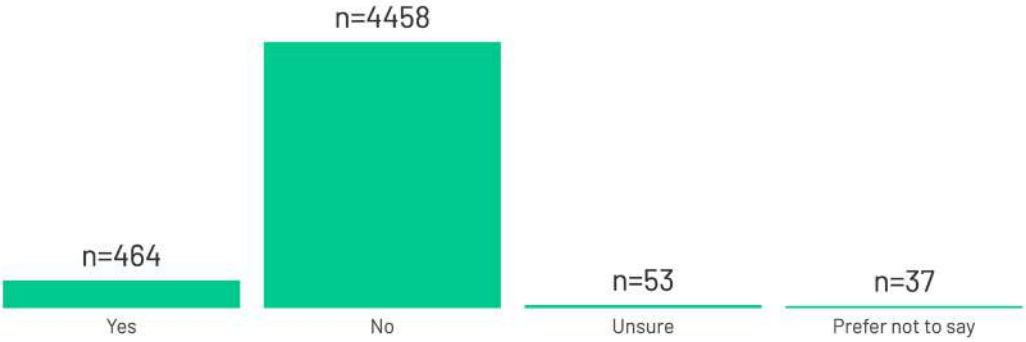
SOCIO-DEMOGRAPHIC OVERVIEW OF HOUSEHOLD RESPONDENTS

Disability status



Of the respondents, 21.8% (n=1094) reported having a disability, while 76.5% (n=3835) reported not having one. A small proportion, 1.7% (n=83), preferred not to disclose their disability status.

Aboriginal and/or Torres Strait Islander identification



A total of 9.3% (n=464) of respondents identified as Aboriginal and/or Torres Strait Islander, whereas 88.9% (n=4458) did not. A small proportion were unsure (1.1%, n=53) or preferred not to answer (0.7%, n=37).

English as the main language spoken

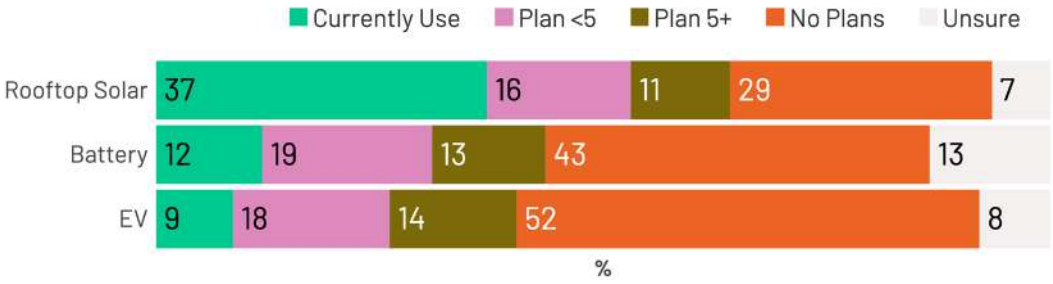
The majority of respondents (90.7%, n=4546) reported English as the main language spoken in their household, while 8.9% (n=444) did not, and 0.4% (n=22) preferred not to say.

SECTION 1:

CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

Households were asked about their current ownership and future intentions ("plan to get in next 5 years" or "plan to get in 5+ years") to own rooftop solar, home batteries, and EVs (including plug-in hybrids).

There was a high degree of rooftop solar use, while home batteries and electric vehicles (EV) were marked by future interest but also very high levels of hesitancy and uncertainty.



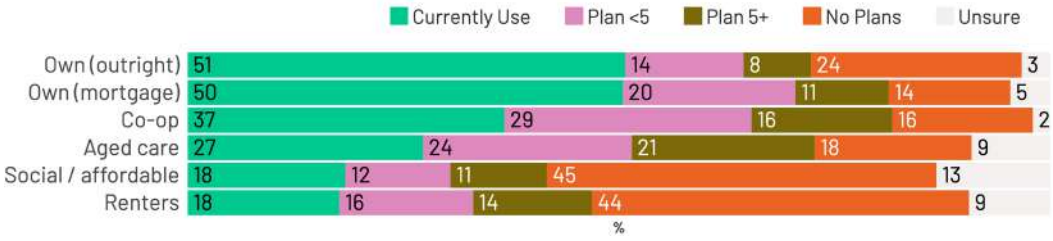
- Rooftop solar emerged as the most widely used CER (37%, n=1856) of households reporting current use. Home batteries and EVs were less commonly currently used, at 12% (n=595) and 9% (n=432), respectively.
- Home batteries were most often planned to be obtained in the next five years, with 19% (n=956) of households indicating this. EVs followed at 18% (n=877), while rooftop solar was slightly lower at 16% (n=805).
- EVs were most frequently planned for in 5+ years, with 14% (n=714) of households planning to obtain one. Home batteries were next at 13% (n=635), followed by rooftop solar at 11% (n=555).
- No plans to own were greatest for EVs, with 52% (n=2592) of households reporting no plans. This was followed by home batteries at 43% (n=2153) and rooftop solar at 29% (n=1470).
- Households were most unsure about whether to obtain home batteries (13%, n=674). EVs followed at 8% (n=397), while rooftop solar had the lowest proportion of unsure households at 7% (n=326).

SECTION 1:

CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

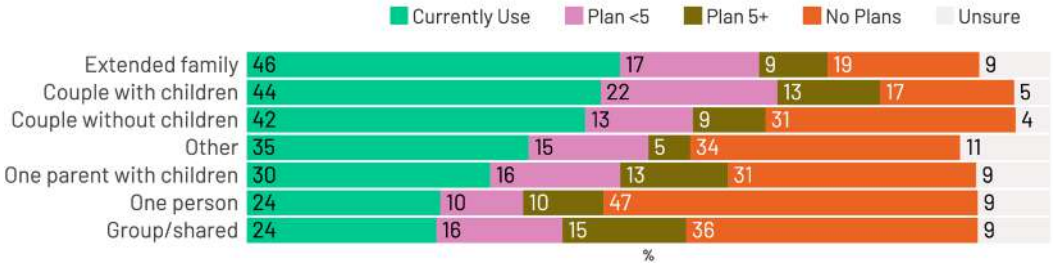
Rooftop solar: growth amid persistent inequities

Homeowners dominated current rooftop solar use, leaving renters and government-supported residents behind.[2]



- Owner-occupiers, both outright (51%, n=747) and mortgaged (50%, n=693), reported the highest levels of current rooftop solar use.
- There was low current use among renters (18%, n=317) and residents in social or affordable housing (18%, n=36), with high proportions indicating no plans to own (renters: 44%, n=788; social/affordable housing: 45%, n=89).
- Cooperative housing had a distinct profile, with both high current use (37%, n=18) and high future intent (45%, n=22). It is important to note the small sample size for this cohort.

Families led in current and planned future use, outpacing one-person and shared households.[3]



- Extended family households (46%, n=174) reported the highest current use of rooftop solar, followed by couples with children (44%, n=638).
- One-person (47%, n=427) and group/shared households (36%, n=146) were most likely to report no plans to own rooftop solar.

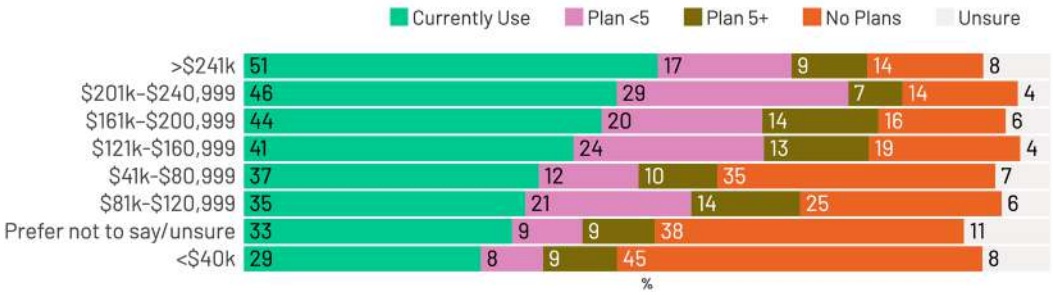
2 The association between household tenure and rooftop solar current and future use was statistically significant: $x^2(24, n = 5012) = 773.52$, $p < .001$. Effect size is small to moderate, Cramer's V = .20. "Other" tenure types were excluded from the analysis.

3 The association between household characteristics and rooftop solar current and future use was statistically significant: $x^2(20, n = 4098) = 227.71$, $p < .001$. Small effect size, Cramer's V = .12.

SECTION 1:

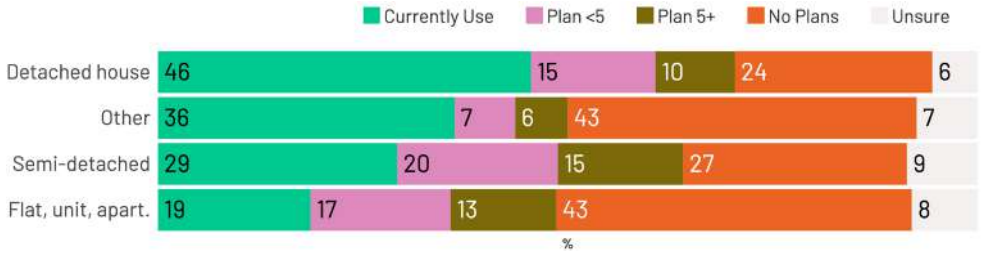
CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

Income levels were associated with rooftop solar use and future plans.[4]



- Rooftop solar use increased steadily with income, from 29% (n=260) among those earning less than $40k to 51% (n=93) for those earning more than $241k.
- Households with incomes below $80k were more likely to report no plans to own the technology (35%—45%).
- Future intent was highest among mid-to-high-income groups ($121k—$240k), where more than one-third planned to own rooftop solar.

Housing type was associated with rooftop solar use and future plans, highest in detached houses and lowest in flats and apartments.[5]



- Rooftop solar use was highest among detached houses (46%, n=1421) and lowest among flats/apartments (19%, n=218).
- Nearly half of apartment residents (43%, n=508) had no plans to own solar, compared to just 24% (n=752) of those in detached homes.
- Apartments and semi-detached dwellings also showed higher levels of uncertainty about ownership of rooftop solar (8%, n=94 and 9%, n=54, respectively).

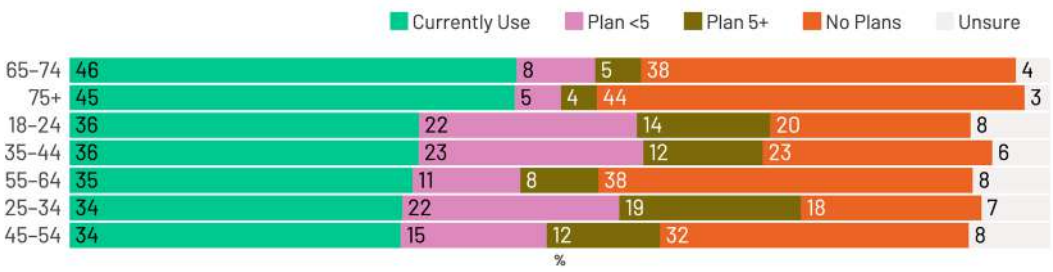
4 The association between household income and rooftop solar current and future use was statistically significant: $x^2(28, n = 5012) = 399.85, p < .001$. Small effect size, Cramer's V = .14.

5 The association between household dwelling and rooftop solar current and future use was statistically significant: $x^2(12, n = 5012) = 338.50, p < .001$.

SECTION 1:

CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

High levels of current use across all ages, especially older groups, but stronger future plans among younger groups.[6]

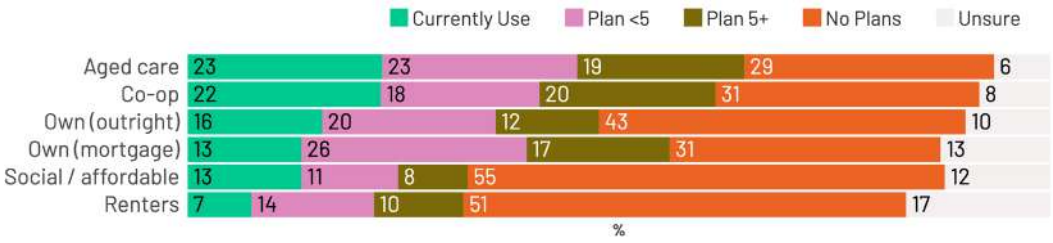


- The most future-focused age group was 25—34-year-olds, with the strongest intent to purchase and the lowest no plans to own.
- Age groups 65 and above had the highest current use but the lowest future plans to own the technology.
- Combined current use and future plans were strongest among 18—44 age groups: 71% (n=447) of 18-24-year-olds currently used or intended to own, 75% (n=647) of 25-34-year-olds, and 71% (n=596) of 35-44-year-olds.

6 The association between age groups and rooftop solar current and future use was statistically significant: x^2 (24, n = 5012) = 414.21, p < .001. Small effect size, Cramer's V = .14.

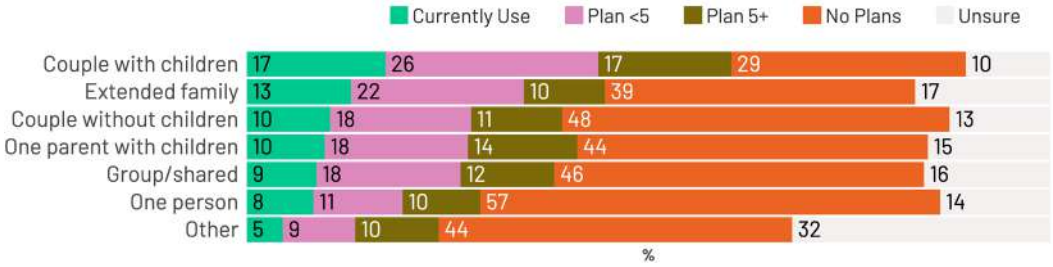
Home battery: uptake currently low, future prospects strong

Current home battery use was highest among owners with a mortgage, while renters and supported housing residents more often reported no plans or uncertainty.[7]



- Current home battery use was highest among aged care and co-op households and lowest among renters (7%, n=133).
- Renters (51%, n=925) and those in social housing (55%, n=109) were most likely to report having no plans to get a home battery, with renters also indicating the highest uncertainty (17%, n=301).

Families, especially couples with children, showed the highest home battery use and future intent, while one-person and non-traditional households ("other") reported low current use and greater uncertainty.[8]



- Couples with children reported the highest current use (17%, n=250) and future intent (43%, n=623) to get a home battery.
- One-person (57%, n=523), couples without children (48%, n=630), and group households (46%, n=185) were among the most likely to report no plans to own a home battery.

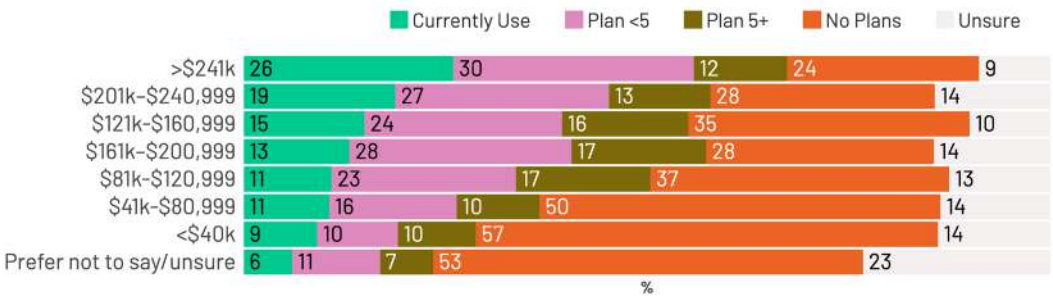
7 The association between household tenure and home battery current and future use was statistically significant: $x^2(24, n = 5010) = 286.26$, $p < .001$. Small effect size, Cramer's V = .12. "Other" tenure type excluded from the analysis.

8 The association between household characteristics and home battery current and future use was statistically significant: $x^2(20, n = 4098) = 227.71$, $p < .001$. Small effect size, Cramer's V = .12.

SECTION 1:

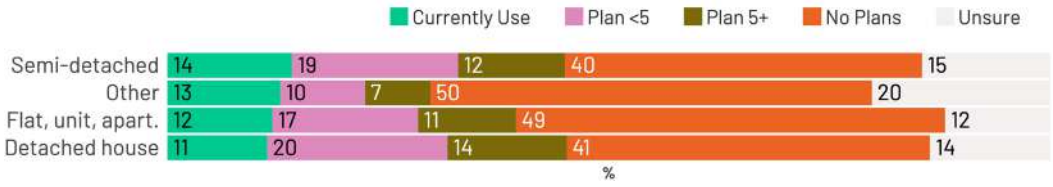
CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

Higher incomes were associated with higher home battery use and future plans, while lower-income groups had no plans or were unsure.[9]



- Current home battery use increased with income, from 9% (n=80) in households earning less than $40k to 26% (n=47) in those earning more than $241k.
- Households earning over $120k showed the strongest future intent to use a home battery, with more than 40% planning to get one.
- No plans to own a home battery was highest among lower-income households (57%, n=506 for less than $40k) and declined with rising income to 24% (n=43) for households earning more than $241k.

Those living in standalone houses had the most future plans to obtain a home battery, while non-detached housing types showed more hesitation.[10]



- Current home battery use was similar across detached houses (11%, n=354), apartments (12%, n=140), and townhouses (14%, n=88).
- No plans to own the technology were highest among flat, unit and apartment residents (49%, n=570) and those in "other" dwellings (50%, n=47).
- Households in townhouses (n=194) and detached homes (n=1059) reported the strongest future intent, with over 30% planning to own a home battery.

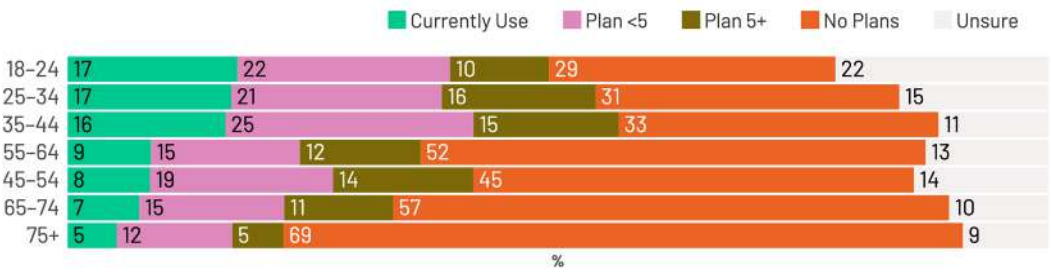
9 The association between household income and home battery current and future use was statistically significant: $x^2(28, n = 5012) = 378.54$, $p < .001$. Small effect size, Cramer's V = .14.

10 The association between household dwelling and home battery current and future use was statistically significant: $x^2(12, n = 5012) = 40.37$, $p < .001$. Very small effect size, Cramer's V = .05.

SECTION 1:

CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

Under-45s led in current use and future plans of home batteries, but a majority of over-65s reported no plans to own one.[11]



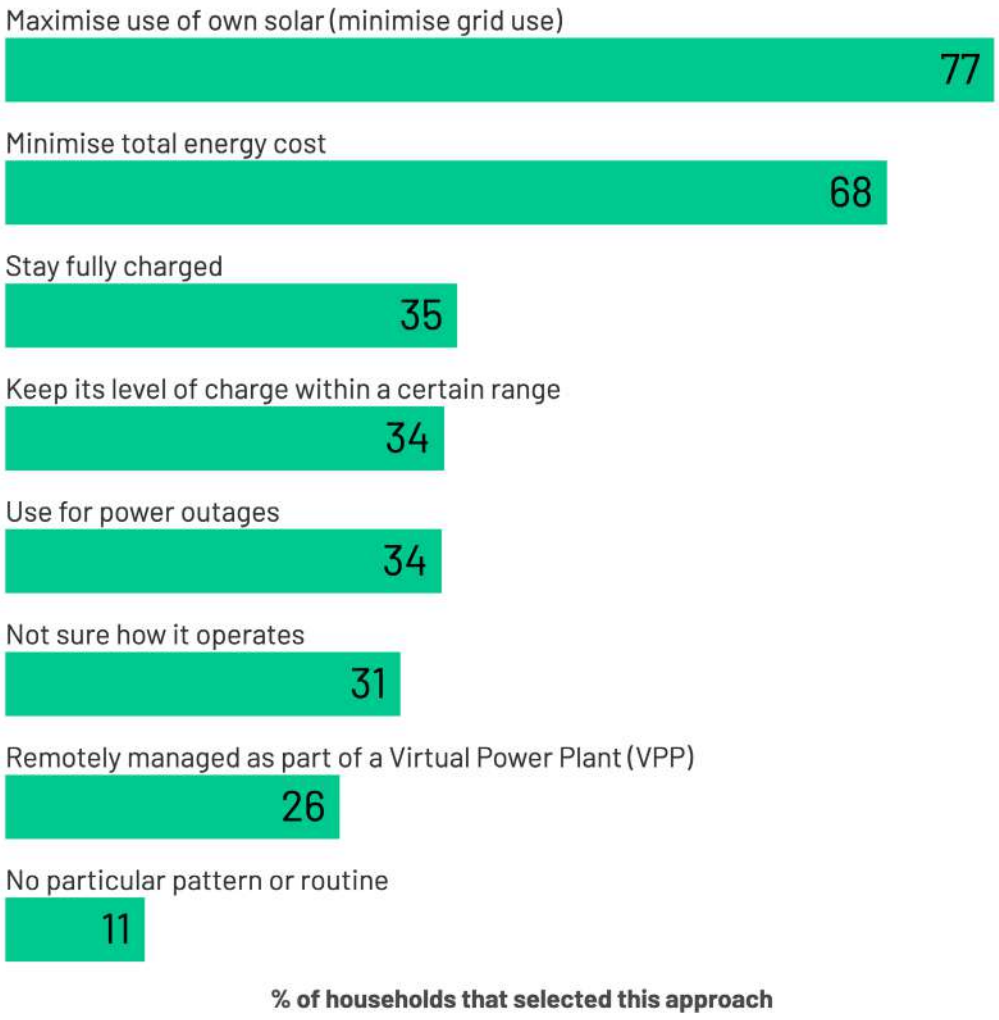
- Younger households (18—44) were leading both in current usage and future intentions to use a home battery, with more than half in almost each group reporting either current usage or future intentions (18-24: 49%, n=307; 25-34: 54%, n=468; 35-44: 56%, n=474). However, uncertainty was higher for younger groups: 1 in 5 18—24-year-olds were unsure.
- Those aged 35—44 showed the highest "next 5 years" intention (25%, n=213) to own home batteries.
- Older households (65+) overwhelmingly had no plans. Among those aged 75+, nearly 70% (n=264) expressed no plans to own a home battery.

11 The association between age groups and home battery current and future use was statistically significant: $x^2(24, n = 5011) = 398.27$, $p < .001$. Small effect size, Cramer's V = .14.

Future battery use: different approaches, solar at the core

Most households planning to install a home battery in the next 5 years intended to maximise their own solar energy as one of a diverse range of future planned strategies.

Households intending to install a home battery in the next five years (19%, n=956) were asked which method best describes how they would operate their home battery. Most intended to maximise use of their own solar energy (77%) and minimise energy costs (68%). Other common plans included keeping the battery fully charged (35%), maintaining a charge range (34%), and using it for backup during outages (34%), while 31% were unsure of their approach and 26% planned VPP participation.



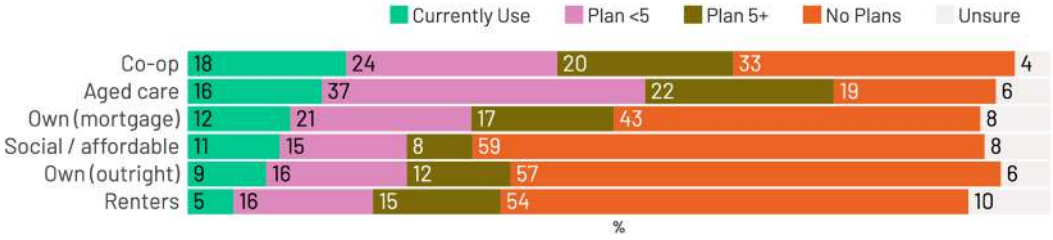
SFL Q11. Base: Households planning to install a home battery in the next five years (19.1%, n = 956); multiple responses permitted

SECTION 1:

CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

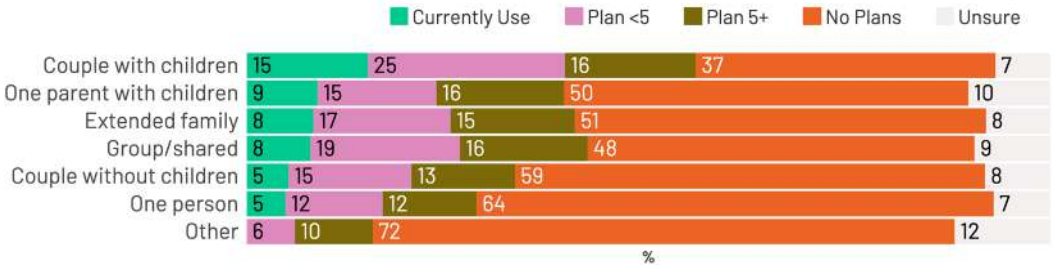
EVs and plug-in hybrids: affordability matters, housing less so

Co-op and aged care residents were most likely to currently use or intend to own an EV in the next 5 years.[12]



- Respondents living in cooperative housing and aged care reported the strongest current use and planned future ownership of EVs, although these groups represented very small sample sizes.
- Of traditional housing tenures, EV use was highest among mortgaged owners (12%, n=163) and lowest among renters (5%, n=96).
- Government-supported households, renters and outright owners showed the highest levels of no plan to own an EV.

Couples with children were most likely to currently use or plan to own an EV in the next 5 years, while one-person and "other" households were least likely to currently use or have future plans for EV ownership.[13]



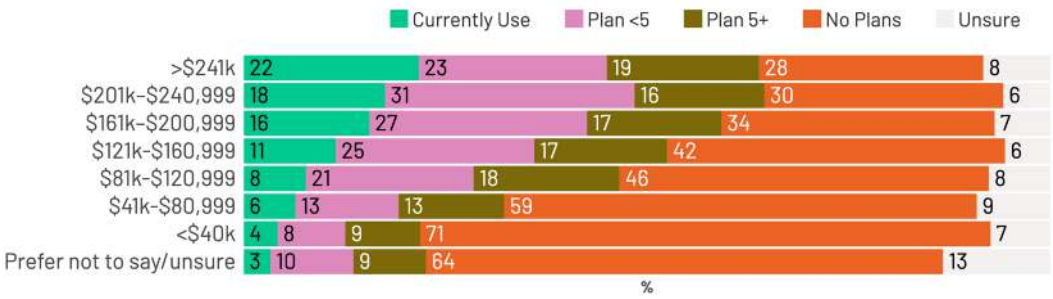
- Couples with children reported the highest current use of EVs (15%, n=219) and future intent (41%, n=589), with 37% (n=539) having no future plans.
- One-person (64%, n=588) and "other" households (72%, n=97) had the highest rates of no plans to own an EV, with minimal current or planned use.
- Group/shared (8%, n=32) and multigenerational (8%, n=31) households reported moderate current use but relatively strong future intent to own an EV.

12 The association between household tenure and EV current and future use was statistically significant: $x^2(24, n = 5012) = 173.08$, $p < .001$. Very small effect size, Cramer's V = .09. "Other" tenure type excluded from analysis.
13 The association between household characteristics and EV current and future use was statistically significant: $x^2(20, n = 4097) = 235.54$, $p < .001$. Small effect size, Cramer's V = .12.

SECTION 1:

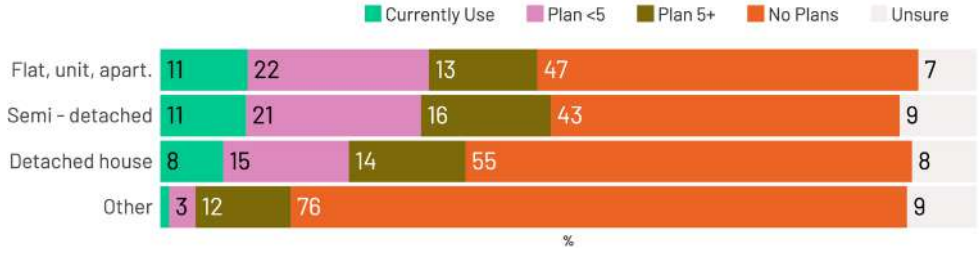
CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

Current use of EVs and future intentions to own one increased with income. Lower-income households were substantially less likely to currently use or plan to own an EV.[14]



- EV use increased sharply with income, from just 4% (n=37) among those earning less than $40k to 22% (n=39) in households earning more than $241k.
- No plans to own an EV was highest in the lowest income group (71%, n=625) and lowest in high-income households (28%, n=50).
- Future intent was strongest among households earning $161k—$240k, with over 45% (n=296) planning to own an EV.

Patterns of current and future use of EVs across dwelling types suggest that housing is less correlated with uptake than rooftop solar.[15]



- EV use was highest among flat, unit, apartment (11%, n=125) and semi-detached home households (11%, n=66).
- Residents in "other" dwellings were the most excluded, with just 1 household reporting current use and 76% (n=71) reporting no plans to own an EV.
- Future intent was strongest among residents of semi-detached homes and apartments, with over one-third planning to own an EV.

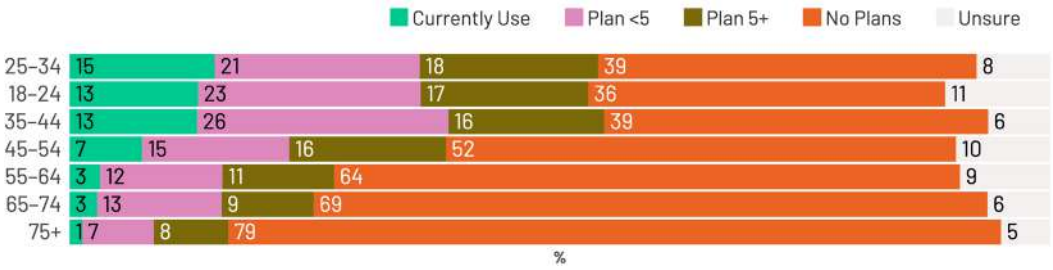
14 The association between household income and EV current and future use was statistically significant: $x^2(28, n = 5012) = 499.57$, $p < .001$. Small effect size, Cramer's V = .16.

15 The association between household dwelling and EV current and future use was statistically significant: $x^2(12, n = 5012) = 93.60$, $p < .001$. Very small effect size, Cramer's V = .08.

SECTION 1:

CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

Current use of EVs peaked among younger groups, while older groups mostly reported no plans to own one.[16]



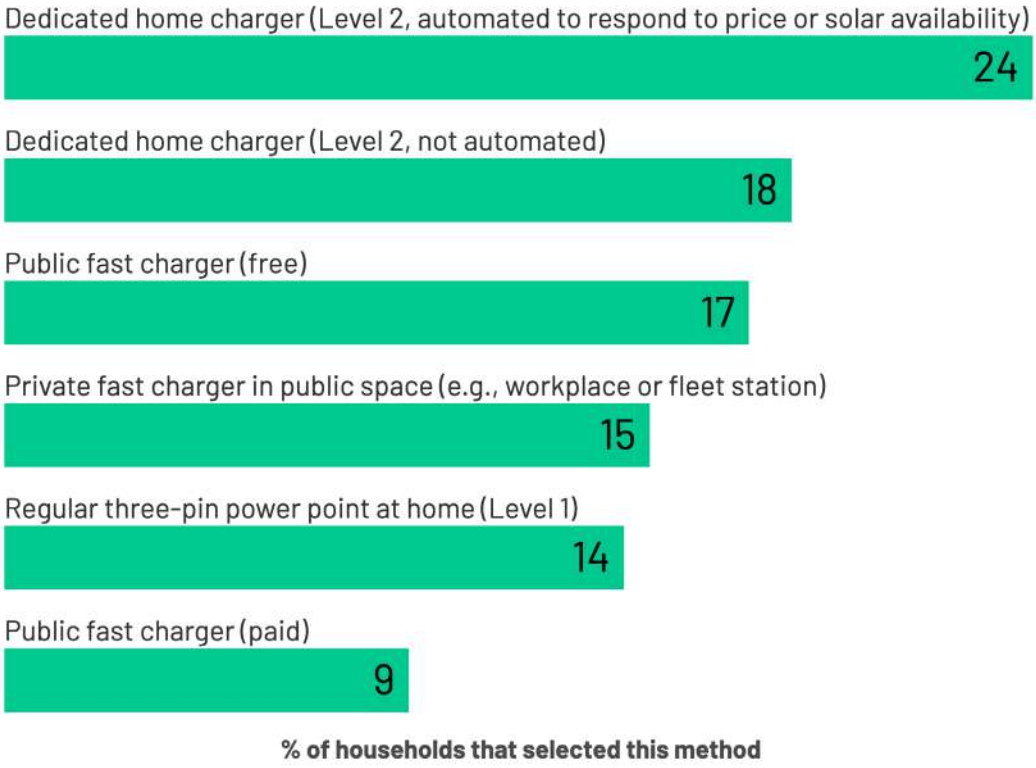
- Younger groups were much more open to purchasing an EV, with 53% (n=939) of 18-44-year-olds showing interest in owning one at some point in the future, while older groups (44+) overwhelmingly did not plan to.
- Only 3% (n=19) of 65-74-year-olds currently owned an EV, while nearly 69% (n=470) had no plans.

16 The association between age groups and EV/plug-in hybrid current and future use was statistically significant: $x^2(24, n = 5012) = 507.46$, $p < .001$. Small-to-moderate effect size, Cramer's V = .16.

EV charging: home-based and solar-smart

There was a strong preference for home-based charging and charging in the least expensive way, such as using solar power or off-peak electricity.

Preferred charging method: Among households that currently owned or planned to purchase an EV or plug-in hybrid in the next five years (n=1,309), home-based charging dominated as the primary preferred method, with nearly a quarter (24%) using or intending to use a dedicated home charger (Level 2) with automation to optimise charging based on electricity prices or solar availability. A further 18% used or planned to use a dedicated home charger without automation.

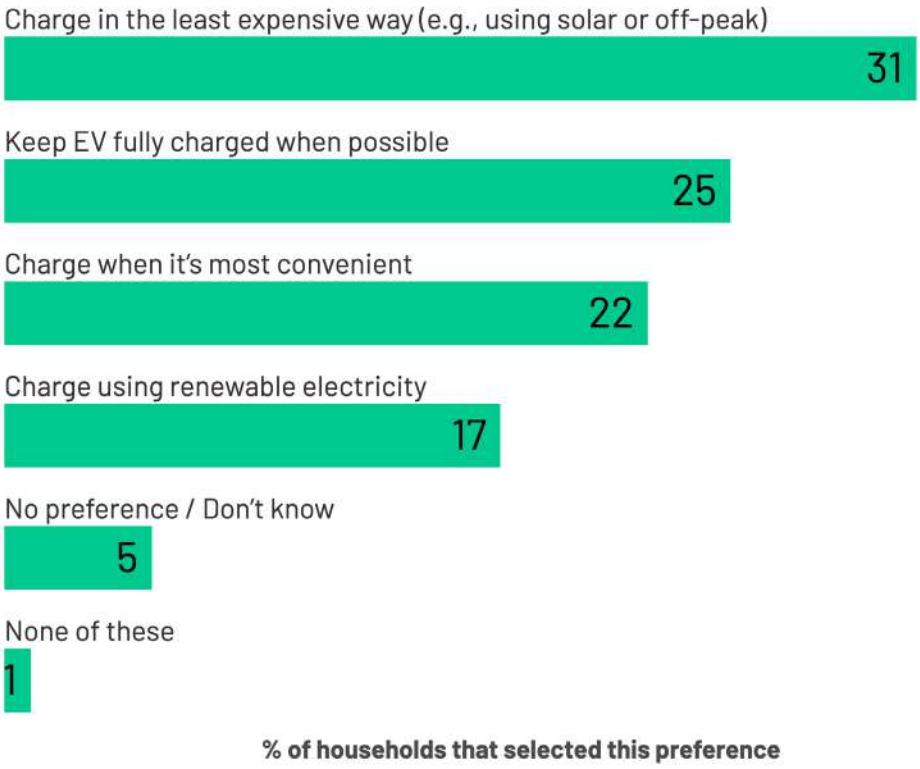


SFL Q13. Base: households that currently owned or planned to purchase an EV or plug-in hybrid in the next five years (n = 1,309)

SECTION 1:

CER: HOME-OWNERSHIP, HOUSEHOLD TYPE, AND INCOME MATTER

Charging preference: Almost one-third (31%) of households that currently owned or planned to purchase an EV or plug-in hybrid in the next five years indicated their preference for charging in the least expensive way, such as using solar power or off-peak electricity. A quarter (25%) aimed to keep their EV fully charged whenever possible, while 22% preferred charging at the most convenient time.



SFL Q14. Base: households that currently owned or planned to purchase an EV or plug-in hybrid in the next five years (n = 1,309)

Key implications: affordable, solar-first, home-based futures

Rooftop solar: a persistent access gap suggests solar uptake is shaped less by willingness and more by feasibility, affordability, and control over housing.

- Despite its growing prominence in national energy planning, rooftop solar remained unevenly distributed. Current use was significantly lower among apartment dwellers, renters, and lower-income households, groups that are often constrained by physical, regulatory, or financial barriers.

Home batteries: targeted interventions are needed to ensure that battery storage and its associated flexibility and resilience benefits are accessible to specific household types.

- Home battery use remained limited and highly uneven, with use concentrated among higher-income, owner-occupied, and family households. Renters, low-income groups, and those in social or marginal housing faced substantial barriers, with over half reporting no plans to own the technology.
- Use preference:
  - Rising concern about power outages may be influencing household battery strategies, with many viewing storage as a potential resilience tool in the face of increasing climate impacts. However, this may deepen inequalities in energy security in disaster-prone areas, as use and future intent were strongly associated with income.
  - With many households unsure about how they would use a battery, retailers and installers will likely play a significant role in shaping use through default settings and advice.
- As the federal government's Cheaper Home Batteries Program scales up, it will be critical to monitor who is participating and design complementary measures to ensure that the scheme does not inadvertently widen existing inequalities in access to clean energy technologies.

EVs and plug-in hybrids: while interest in EVs is growing, widespread use remains constrained by affordability and infrastructure access.

- EV current and future ownership was closely tied to income and household composition, with the highest uptake among high-income, mortgaged, and family households. In contrast, lower-income groups, one-person households, and those in marginal or undefined housing reported low current use and limited future intent. Cost, familiarity with technology, and shorter perceived driving horizons may explain lower current and future use among older households.
  - **Charging method:** While investments in shared or public charging infrastructure may help to broaden EV ownership, especially in dense or low-income housing areas, there was a strong preference for home-based charging, meaning renters and apartment dwellers risk being forced to rely on less convenient and often more expensive public charging. The integration of shared EV charging infrastructure in new and existing multi-unit dwellings (MUDs), along with mechanisms that empower renters to access it, is likely to become increasingly important for equitable EV adoption and effective policy outcomes.
  - **Charging preference:** Many households planned to charge their EVs using solar or off-peak electricity, a trend that could increase rooftop solar and home battery ownership. This strong preference for low-cost charging also presents opportunities to inform DSM programs encouraging shifting demand to off-peak periods.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

The following insights have important implications for demand management programs and household flexibility.

WFH: a majority experience

Households were asked to report how many days per week the household member who works from home the most usually does so, and whether they or anyone else in the household operates a business from home.

In 42% (n=2103) of households, no person worked from home. Around one-third worked from home part of the week, with 16% (n=813) doing so 1—2 days and 21% (n=1032) doing so 3—4 days per week. A further 18% (n=887) indicated working from home 5 or more days per week, while 4% (n=179) were unsure.

SFL Q4.

Households where members worked from home experienced higher electricity bills than households where no members worked from home.[17]

Figure: bill size data was self-reported. The figure excludes bill size options "unsure" and "prefer not to say".

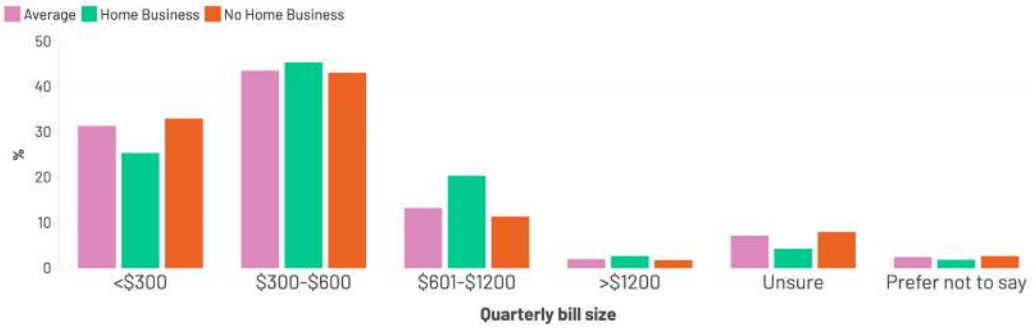
- Non-WFH households were more likely to report very low bills (<$300): Of households with no one working from home, 40% (n=848) reported quarterly bills under $300, substantially higher than WFH households (24—26%).
- WFH households were more concentrated in the mid-range ($300—$600): 48% (n=387) of those WFH 1—2 days, 50% (n=515) of those WFH 3—4 days, and 46% (n=410) of those WFH 5+ days fell into this bill category, compared with 39% (n=815) of non-WFH households.
- Higher bills ($601—$1200) were more common among frequent WFH households: 19% (n=168) of households with 5+ WFH days reported bills of $601—$1200, compared with only 9% (n=192) of non-WFH households, indicating that regular home presence may drive up electricity costs.
- Very high bills ($1200+) were rare but slightly more frequent in WFH households: around 3% (n=26) of 5+ WFH households versus 1% (n=21) of non-WFH households.

17 The association between working-from-home frequency and household electricity bill size was statistically significant: $x^2(20, n = 5012) = 313.32$, $p < .001$. Small effect size, Cramer's V = .13.

Home businesses: 1 in 5 households

A majority of households (79%, n=3956) reported that no one operated a business from home, while 21% (n=1057) indicated that someone in their household operated a home-based business.

Households with home businesses were more likely than those without a home business to report higher quarterly electricity bills.[18]



- Most households reported their quarterly bill size as between $300 and $600.
- Home-business households reported higher bills overall, with 20% (n=215) spending $601—$1200 per quarter, compared with 11% (n=451) of non-home-business households.
- Non-home-business households more often report lower bills (<$300), with 33% (n=1305) of non-home-business households falling into this category, compared with 25% (n=268) of home-business households.

18 The association between home business households and quarterly bill size was statistically significant: $x^2(5, n = 5011) = 88.42$, $p < .001$. Modest effect size, Cramer's V = .133

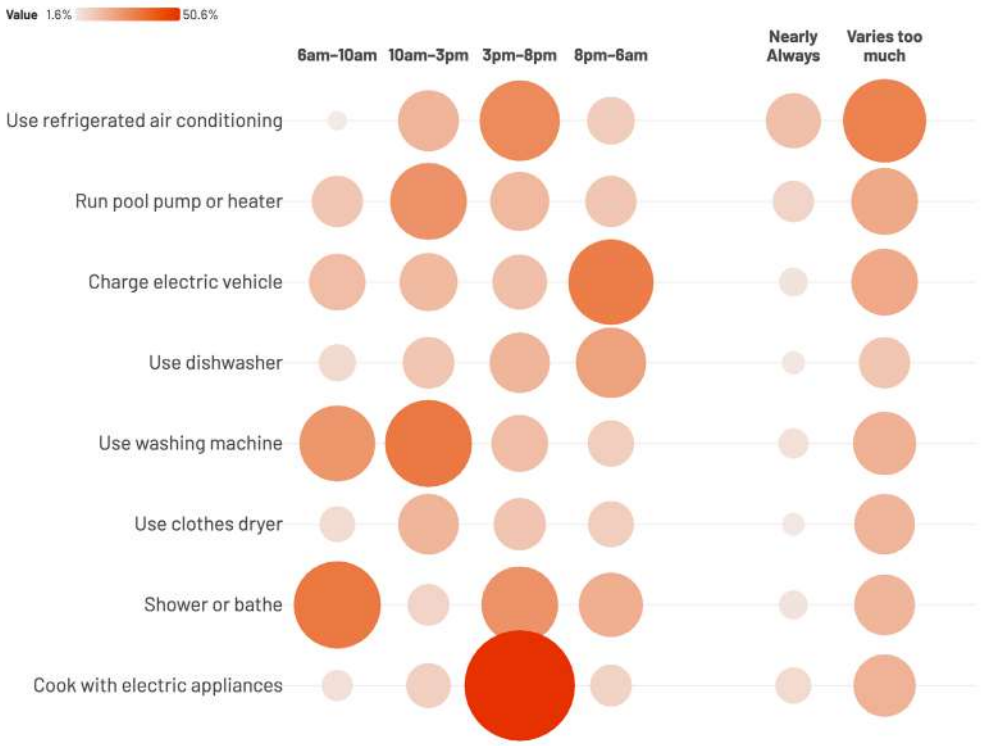
SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Time of energy-intensive activities: hot days, flexible routines

The reported timing of energy use for key household appliances and systems revealed distinct daily patterns and degrees of variability. However, for many households, energy use does not follow consistent or predictable routines.

Households were asked when they typically carried out energy-intensive activities on a hot summer day.



SFL Q16.

- Refrigerated air conditioning use peaked in the late afternoon (3 pm—8 pm, 27%) and mid-morning to early afternoon (10 am—3 pm, 15.5%). However, 29% of households said usage varied too much to specify a time.
- Pool pumps/heaters were most commonly used between 10 am and 3 pm (25%), aligning with solar generation potential. Usage patterns were moderately dispersed, with 19% indicating high variability.
- EV charging was most likely to occur overnight (8 pm—6 am, 30%), suggesting alignment with off-peak periods. Usage across other times of day was more evenly spread, and 19% reported variability.
- Dishwasher use peaked in the evening (8 pm—6 am, 21%) and late afternoon (3 pm—8 pm, 15%), while 11% of households reported no consistent pattern.
- Washing machines were most often used during daytime hours, particularly between 10 am and 3 pm (31%) and 6 am—10 am (24%), with 17% of households reporting variable timing.
- Clothes dryers peaked in use from 10 am to 3 pm (15%). Around 15% of households reported high variability.
- Showering or bathing was most concentrated in the morning (6 am—10 am, 32%) and early evening (3 pm—8 pm, 25%). Only 4% of households did this at consistent times across days, while 15% said timing varied.
- Electric cooking peaked heavily in the evening (3 pm—8 pm, 51%), with little usage at other times, and 16% of households reported no fixed routine.

SECTION 2:

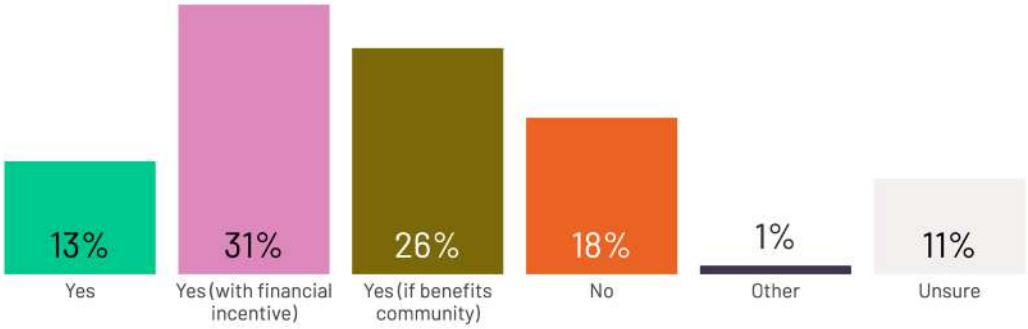
DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Increasing use during solar abundance: incentives effective, community matters

Households expressed broad interest in participating in demand-shifting, particularly when incentives were offered.

Households were asked whether they would be willing to increase energy use during an afternoon of high local solar generation to help stabilise the grid.[19] The most common response (31%, n=1544) was "yes, if a financial incentive was provided." A further 26% (n=1298) were willing to participate if it benefited their local community. Only 13% (n=669) reported willingness without any incentive. Meanwhile, 18% (n=924) of respondents were not willing to shift their energy use, and 11% (n=539) were unsure.

These results have been included in the following graphs as annotation lines for comparison.

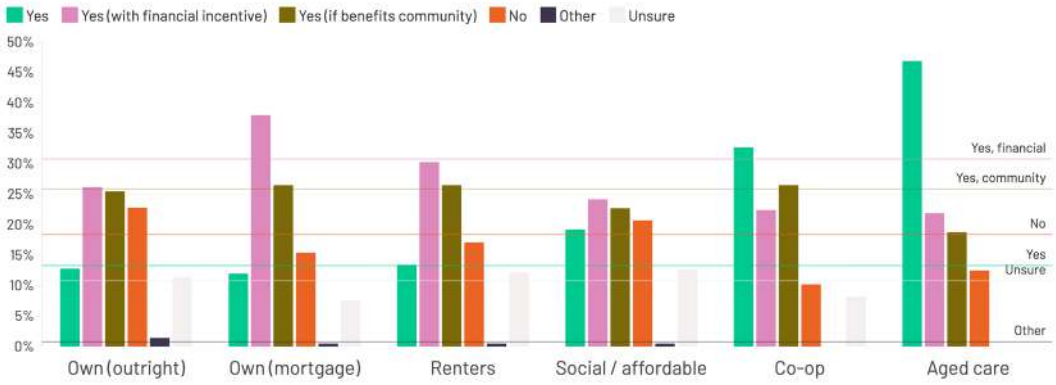


19 SFL Q20. Single-answer response

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Willingness to increase energy use during solar abundance was highest among mortgaged owners, while renters and social housing residents were engaged but more hesitant.[20]



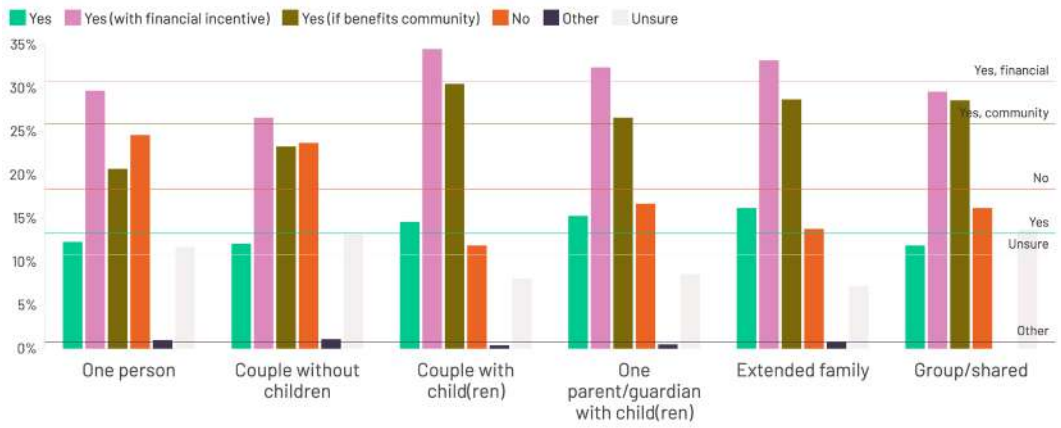
- Mortgaged owners were the most willing to increase use during solar abundance, with 38% (n=522) willing to shift energy use if financially incentivised and 27% (n=364) if they thought it would benefit their community. They also had the lowest proportion unwilling to participate (15%, n=211).
- Twenty-six per cent (n=375) of outright owners and 27% (n=478) of renters were willing to increase use during periods of high local solar generation if it benefitted their community, but both had relatively high levels of refusal (23%, n=336 and 17%, n=309) and uncertainty (11%, n=167 and 12%, n=220).
- Cooperative (33%, n=16) and aged care (47%, n=15) households showed high willingness even without incentives, though these groups were small in absolute numbers.

20 The association between willingness to increase energy use during solar abundance and household tenure was statistically significant: $x^2(30, n = 5012) = 167.49$, $p < .001$. Very small effect size, Cramer's V = .08.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Willingness to increase energy use during solar abundance was highest within family households, particularly those with children.[21] In contrast, one-person households and couples without children show greater hesitancy.



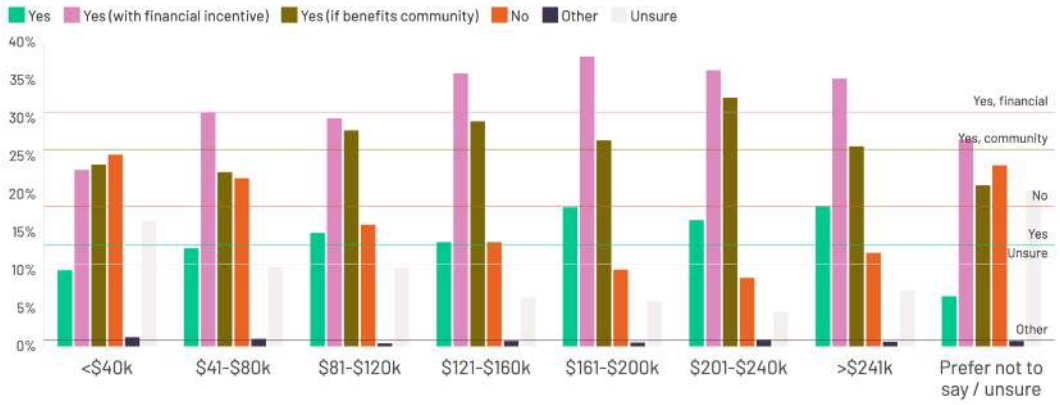
- Couples with children showed the highest willingness to increase use during solar abundance, with 35% (n=499) saying they would do so if financially incentivised, 31% (n=442) willing to do so for community benefit, and 15% (n=211) without financial incentive.
- One-parent and multigenerational households also expressed high flexibility, with over 70% of each group willing to increase energy use under at least one of the three affirmative options.
- Group households and couples without children showed more conditional support, with lower rates of willingness without incentive and higher levels of uncertainty or refusal.
- "Other" households were the least engaged overall, with the highest rates of refusal (22%, n=29) and uncertainty (19%, n=25), although this group was small in absolute numbers.

21 The association between willingness to increase energy use during solar abundance and household occupant characteristics was statistically significant: $x^2(25, n = 4098) = 162.12$, $p < .001$. Very small effect size, Cramer's V = .09.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Willingness to increase energy use during solar abundance varied by income, with higher-income households more likely to require financial incentives, while lower-income groups more often expressed uncertainty or chose to opt out entirely.[22]



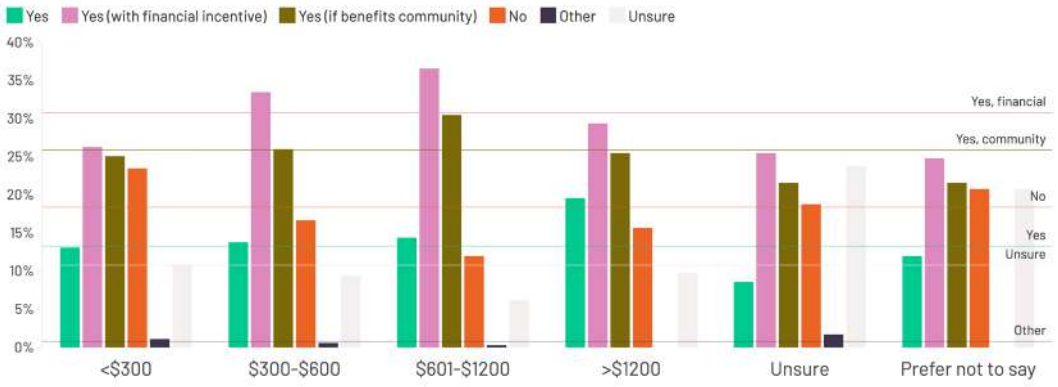
- Over one-third of households earning above $120k said they would increase use only if financially incentivised (36%, n=252, of $121-160k group; 38%, n=166, of $161k-200k group; 36%, n=81, of $201k-240k group).
- Lower-income households were more likely to indicate they would say no or be unsure how to respond to requests asking them to use more energy during high local solar generation. Among those earning less than $40k, 25% (n=223) said they would not shift use, and 17% (n=146) were unsure, both above the overall sample average.
- Community benefits were also important across all income groups, with the highest importance indicated for respondents with mid to high incomes (28%, n=275, of $81-120k group; 30%, n=208, of $121-160k group; 27%, n=118, of $161k-200k group; 33%, n=73, of $201k-240k group).

22 The association between willingness to increase energy use during solar abundance and income level was statistically significant: $x^2(35, n = 5015) = 257.98$, $p < .001$. Very small effect size, Cramer's V = .10.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Willingness to increase energy use during solar abundance was associated with bill size, with higher-bill households more likely to express willingness to shift usage for both economic and community reasons.[23]



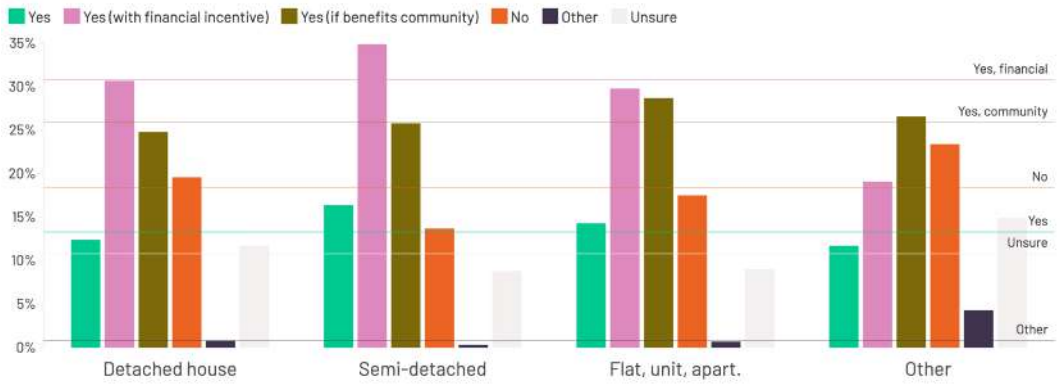
- Willingness to shift use during periods of high solar generation with a financial incentive was highest among those who self-reported moderate-to-high bills, peaking at 37% (n=244) for those paying $601—$1200 per quarter.
- Those reporting <$300 per quarter were least likely to participate for financial incentive (26%, n=414), and had the highest outright refusal rate (24%, n=370).
- Respondents who reported paying $601—$1200 per quarter also showed the highest willingness to shift for community benefit (31%, n=203).
- Respondents who were unsure or preferred not to disclose their bill were significantly less engaged overall, with elevated rates of uncertainty and refusal, suggesting that lack of bill awareness may indicate broader disengagement in energy issues that inhibits participation in demand-response programs.

23 The association between willingness to increase energy use during solar abundance and bill size was statistically significant: $x^2(25, n = 5012) = 184.96$, $p < .001$. Very small effect size, Cramer's V = .09.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Willingness to increase energy use during solar abundance was associated with dwelling type, although the strength of this association was limited.[24]



- Semi-detached/townhouse residents were the most willing to increase energy use during high local solar generation with financial incentive (35%, n=219) and also reported the lowest refusal rate (14%, n=86).
- Apartment residents showed the highest willingness to shift use for community benefit (29%, n=349), indicating strong collective values despite the practical limitations often associated with shared dwellings and body corporates.
- Detached house dwellers indicated mixed willingness to participate, with 31% (n=958) selecting financial incentives, but one in five (20%) reporting they were unwilling to shift use.

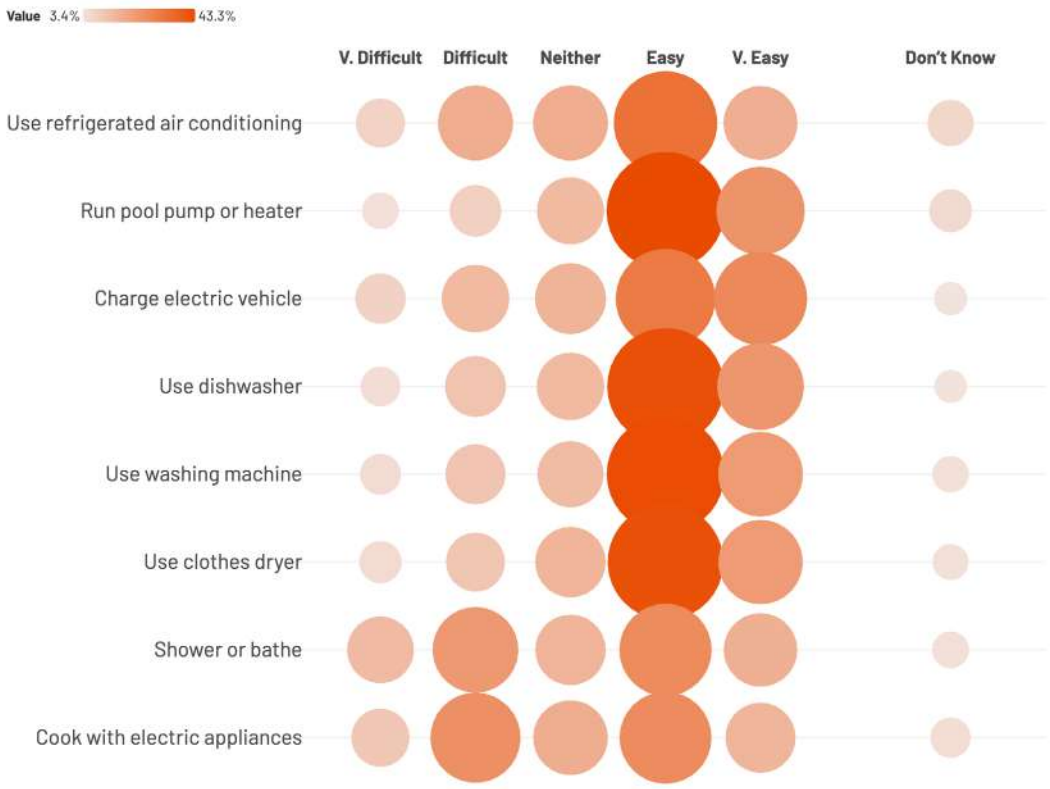
24 The association between willingness to increase energy use during solar abundance and dwelling type was statistically significant: $x^2(15, n = 5012) = 58.14$, $p < .001$. Very small effect size, Cramer's $V = .06$.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Shifting energy use into periods of solar abundance: flexibility for some large appliances and EV charging

Most households saw activities like running pool equipment, charging EVs, and using dishwashers or washing machines as relatively easy to shift to the solar window. In contrast, core routines such as cooking and bathing were perceived as harder to move, suggesting limits to load shifting.



SFL Q17.

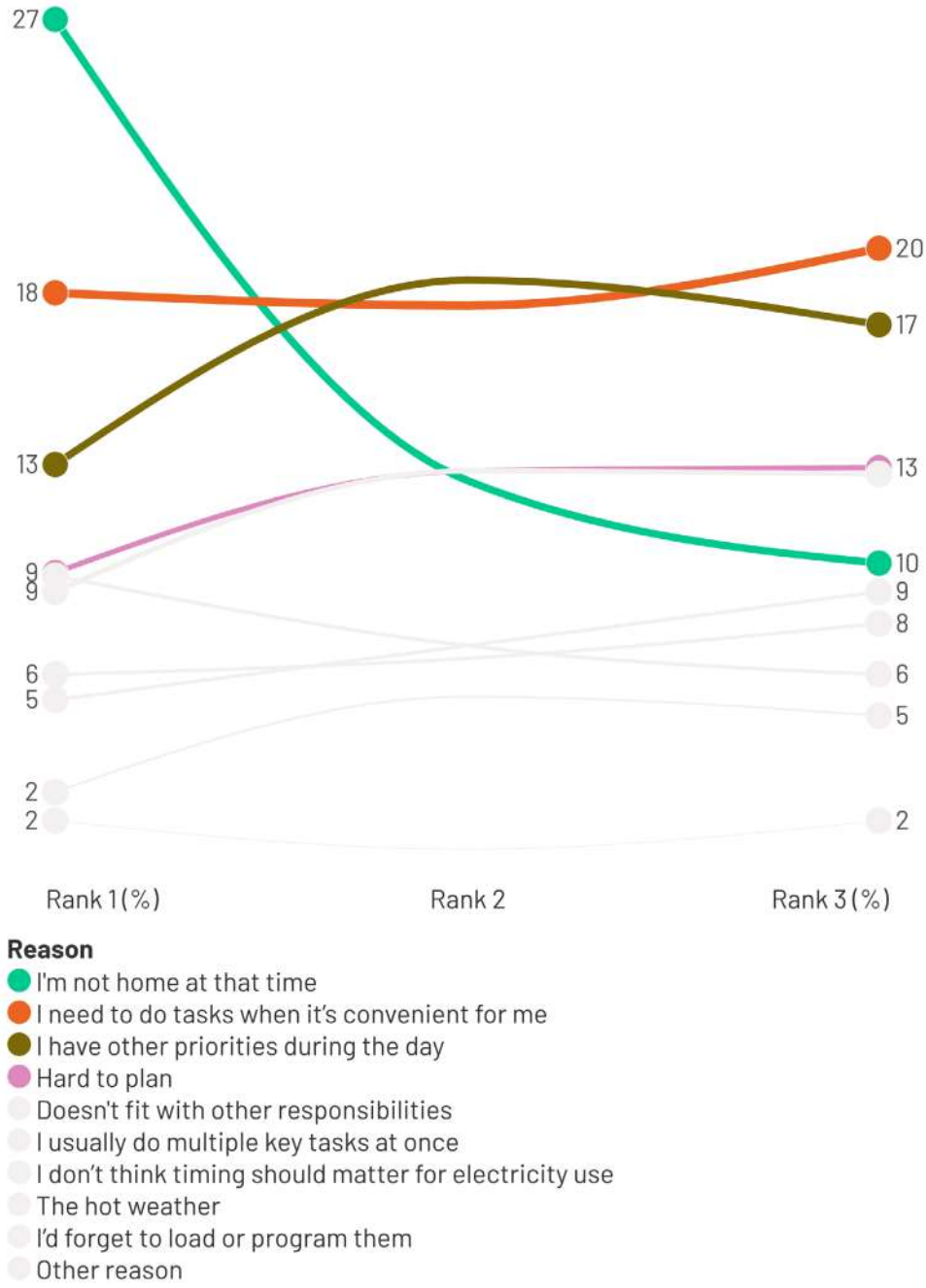
Households were asked how easy or difficult it would be to shift key household activities to the middle of the day when solar power is most available. Responses varied by activity, reflecting differing levels of flexibility in routines and appliance use.

- Easiest to shift: pool pump/heater use (68% said "easy" or "very easy"), EV charging (58%), dishwasher (66%), washing machine (65%), and clothes dryer (64%).
- Most difficult to shift: showering or bathing (37% said "difficult" or "very difficult"), electric cooking (36%), and air conditioning (25%).
- High uncertainty: A small but notable proportion were unsure, especially for pool pumps (6%) and EV charging (4%).

Limits of flexibility: the realities of household life

The most significant difficulties for shifting energy-intensive tasks to the middle of the day were tied to availability, convenience, and competing demands — issues that reflected the everyday realities of busy households.

Households were asked to rank a list of reasons in order of relevance for why shifting energy-intensive tasks to the middle of the day would be difficult. The total number of selections across all ranks is represented by the line thickness in the figure below.



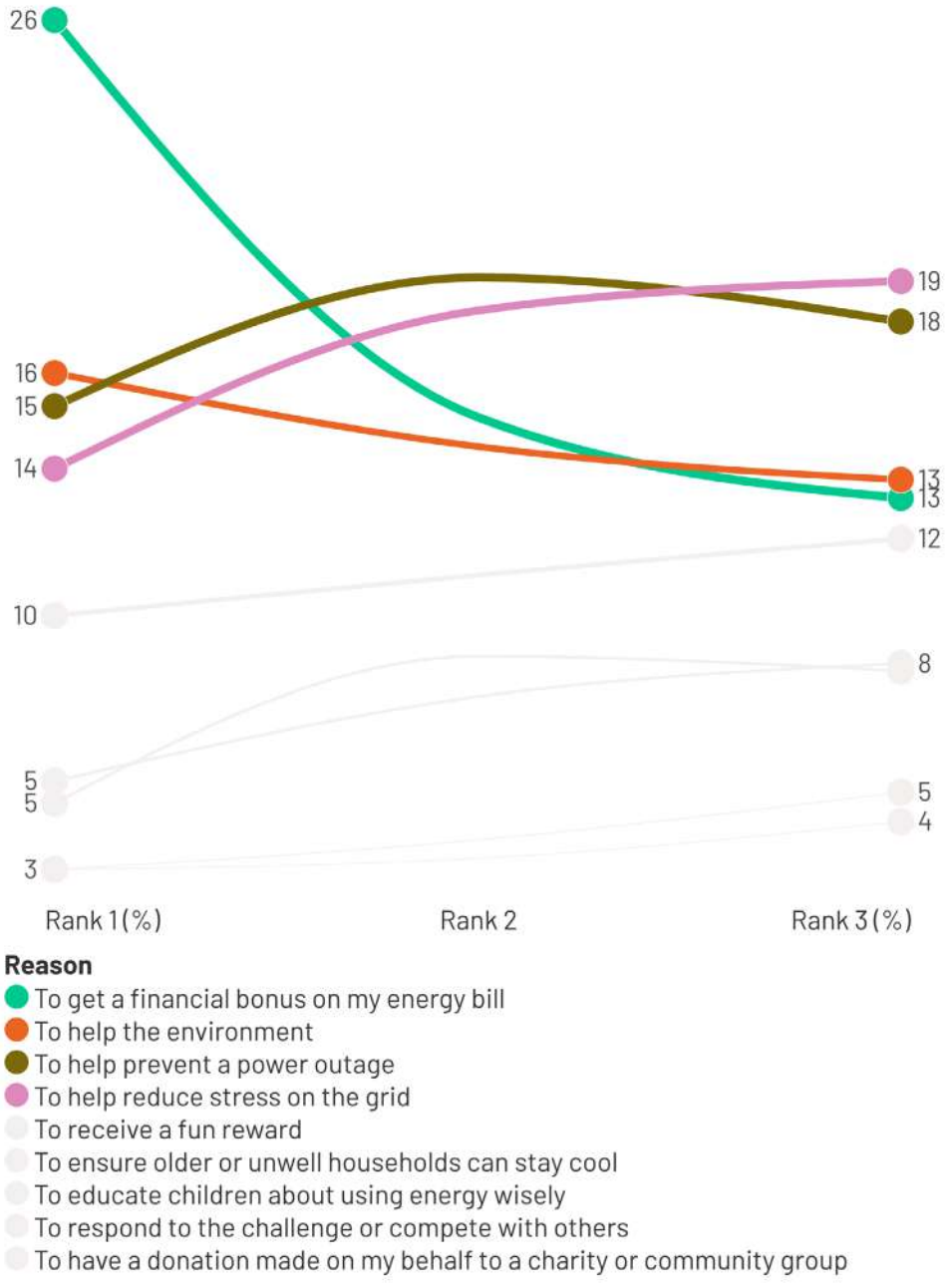
SFL Q18. Base (n = 2582): households that answered very difficult or difficult in SFL Q17: "how easy or difficult it would be to shift key household activities to the middle of the day when solar power is most available?"

- Not being home at that time was the most commonly cited difficulty for shifting tasks, with 27% (n=689) of households ranking it first.
- This reason was followed by the need to do tasks at convenient times (18%, n=467 ranked it first), having other daytime priorities (13%, n=327 ranked it first) and finding it hard to plan ahead (9%, n=240 ranked it first).

Willingness to reduce energy at peak demand: responsibility over novelty

Most households said they would reduce peak energy use in their homes for financially and socially responsible reasons (such as helping the grid or others) and ranked these reasons as more important than novelty or gamification.

Households were asked about their willingness to reduce their energy use for a short period during times of very high energy demand (e.g. extreme heat when many people use air conditioning) if asked by energy providers or community groups. They were asked to rank three of the following reasons in order of importance for why they would reduce energy use in their home.



SFL Q19.

SECTION 2:

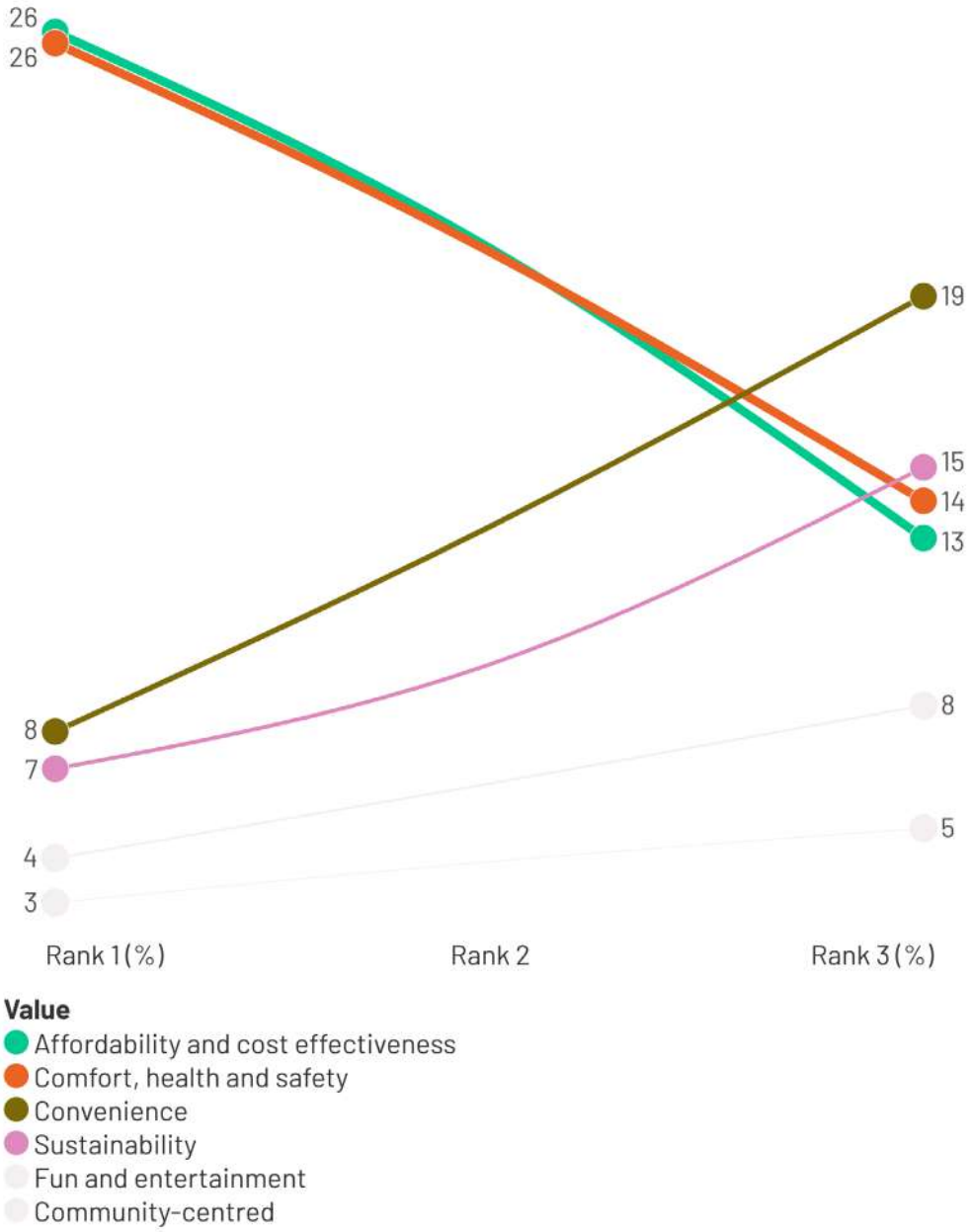
DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

- Financial incentives were most commonly cited as the primary reason for why households might reduce their energy use during periods of high demand (e.g. extreme heat) (26% ranked it first).
- Other prominent reasons were environmental concern (16% ranked it first) and preventing power outages (15%).
- Helping reduce grid stress and protecting vulnerable households (e.g. older or unwell people) were also frequently ranked second and third, suggesting these were meaningful secondary considerations.
- Fun rewards, education for children, charity donations, and competition were less commonly selected as top motivators, though they held some appeal in lower-ranked positions.
- Only 4% of households said they would not reduce peak demand in their homes at all.

Photo by Geometric Photography

Household values: affordability, comfort, health and safety

We asked households to rank the priorities or values that most closely aligned with their household.



SFL Q28.

- A total of 27% either did not know or did not select from the listed options.
- Households most often placed affordability and cost-effectiveness (26%, n=1318) or comfort, health and safety (26%, n=1301) in first place.
- Convenience (8%), sustainability (7%), and fun and entertainment (4%) were less commonly ranked first.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Key implications: unlocking opportunities amidst everyday realities

The most selected limitations for shifting demand were social and lifestyle factors such as convenience, competing responsibilities, and challenges in planning ahead. This highlights opportunities for DSM initiatives to leverage financial and community-based incentives that encourage flexibility, while also accounting for household attributes, including the presence of home businesses and the growing prevalence of work-from-home arrangements.

WFH: fifty-four per cent of households reported working from home at least one day per week. These households present opportunities for DSM initiatives to target daytime flexibility (e.g. shifting appliance use into the solar window).

- DSM strategies may increase uptake and desired outcomes by segmenting households based on work patterns, recognising that not all households are equally able to shift usage to midday.
- DSM program design could improve equity outcomes by offering alternatives (automation, pre-programmed devices, and community energy schemes) that support households unable to be physically present during the day.

Home businesses: around 21% of households reported operating a home business. These home-based businesses typically faced higher electricity costs, likely reflecting additional energy use associated with business operations.

- Given the top reason for being unable to shift use was not being at home during the day, DSM programs may consider home businesses higher-potential candidates for tailored support, cost-saving measures, or demand flexibility initiatives. These programs could also consider other causes of bill size (income, household size, dwelling type) alongside business operation status.

Increasing use: DSM programs can increase participation in solar abundance shifting by aligning incentives with household circumstances.

- Mortgaged owners, family households, and higher-bill households present the greatest immediate opportunities. Renters, low-income groups, and single households may need more tailored support and equity-focused incentives.
- Households with higher bills are most motivated by cost savings, while lower-income and low-bill households are more likely to opt out. DSM programs should ensure incentives are equitable and meaningful to support inclusive participation.
- Apartment residents were strongly community-minded, while detached house dwellers showed more mixed interests. In response, program design could adapt, e.g. offering community-based DSM schemes in apartment complexes while emphasising cost savings and autonomy for detached-home households.
- Mortgaged owners were the most responsive overall, with high willingness and low resistance. Demand-side management programs would benefit from addressing these tenure-specific constraints and ensuring benefits are accessible to all.

SECTION 2:

DEMAND-SIDE MANAGEMENT (DSM) AND HOUSEHOLD ROUTINES: HOME BUSINESS AND WFH HOUSEHOLDS PRESENT OPPORTUNITIES FOR DSM INITIATIVES

Shifting use: the ability and willingness of households to participate in DSM programs to help stabilise the grid was associated with a number of issues. Opportunities to increase participation in DSM programs include targeting more flexible activities and large appliances.

- Many household energy practices (e.g. electric cooking, bathing, and air conditioning) are tied to comfort and everyday routines. When designing engagement strategies, programs should strive to consider daily routines and responsibilities and focus less on shifting essential routines and more on activities already perceived as flexible. For instance, pool pumps, EV charging, dishwashers, and washing machines were seen as relatively easy to move to the solar window, providing a clear entry point for DSM initiatives.

Values: aligning DSM programs with household priorities and values of affordability, comfort, health and safety provides opportunities for increasing participation and desired outcomes.

- Affordability, comfort, health, and safety dominated household priorities. Sustained emphasis on financial rewards, penalties, or cost-reflective pricing risks undermining demand management, particularly where such measures are seen to threaten household comfort, health, or safety.
- Most households were open to DSM participation, particularly if motivated by financial incentives (26%), environmental concerns (16%), or preventing outages (15%). Programs should aim to blend economic rewards with community and environmental benefits to broaden appeal and avoid over-reliance on financial levers.

Photo by Cameron Tidy on Unsplash

SECTION 3:

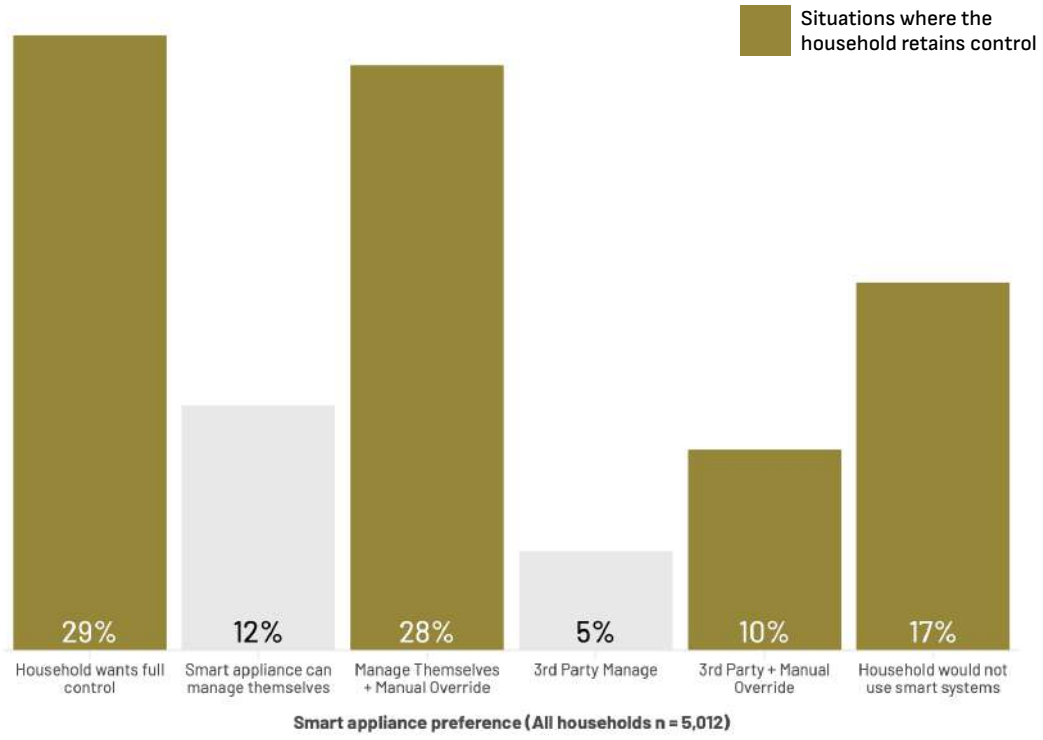
FUTURE SMART APPLIANCE AUTOMATION AND V2G: CONNECTED FUTURES

A household's receptiveness to grid-interactive technologies like vehicle-to-grid (V2G) was associated with how they envision their futures, or lack thereof, with automated smart appliances.

Smart appliance futures: automate, but do not take over

Most households were open to some form of automation, but a clear majority valued the ability to retain control.

Households were informed of a possible future where appliances like hot water systems, EV chargers, and pool pumps may be set to run automatically when electricity is cheaper or greener.[25] The survey then asked households to select an option that best reflected how they would prefer to use smart appliances.



SFL Q21.

- The vast majority of respondents (84%, n=4198) indicated they want to retain some form of control or override over future smart appliances. This includes the 17% (n=873) of respondents who would not use smart systems at all.
- The most common preference was full control and scheduling of smart systems and appliances (29%, n=1458), followed closely by being happy for appliances to manage themselves with manual override (28%, n=1390).
- Smaller numbers preferred automation without override (12%, n=580) or third-party management with (10%, n=477) or without (5%, n=234) override.

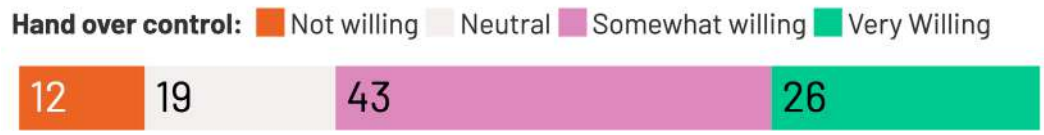
25 The full text provided to survey respondents was as follows: "In the near future, appliances like hot water systems, EV chargers, and pool pumps may be set to run automatically when electricity is cheaper or greener. They could manage themselves (if 'smart') or be controlled by in-home systems such as energy management platforms or AI assistants. These systems may also respond to signals from external providers to take advantage of lower electricity prices or periods of high renewable energy availability. Critical appliances, such as life support equipment, would not be affected. How would you use smart appliances?"

EV household V2G participation: control preferences matter

Most EV households were open to participating in vehicle-to-grid (V2G) programs, but most also wanted to keep control over their future smart appliances.

The survey asked households that currently use or intend to own an EV or plug-in hybrid in the next five years how willing they would be to allow a third party to control their EV to supply electricity back to the grid during periods of high demand.

- A majority of households expressed openness to participating in V2G programs: 43% (n=554) were somewhat willing, and 26% (n=341) were very willing.
- Together, this indicated that nearly 69% of potential EV users were at least somewhat open to allowing a third party to control their vehicle to supply electricity back to the grid during high demand periods.

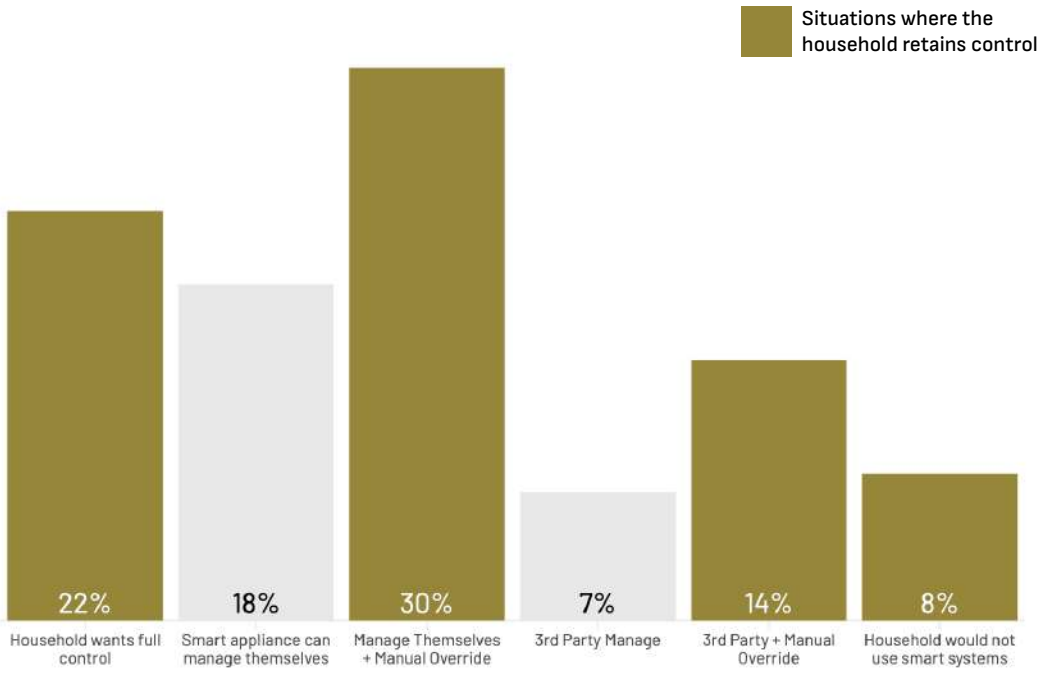


SFL Q15. Base: households that currently owned or planned to purchase an EV or plug-in hybrid in the next five years (n = 1,296) *13 cases excluded from the analysis

SECTION 3:

FUTURE SMART APPLIANCE AUTOMATION AND V2G: CONNECTED FUTURES

While these findings suggest that a significant proportion of future and current EV owners could be receptive to V2G participation, to better understand the context of V2G acceptance, we examined how this cohort's preferences for future smart appliance automation and control related to their willingness to allow third-party control of EVs for grid support.



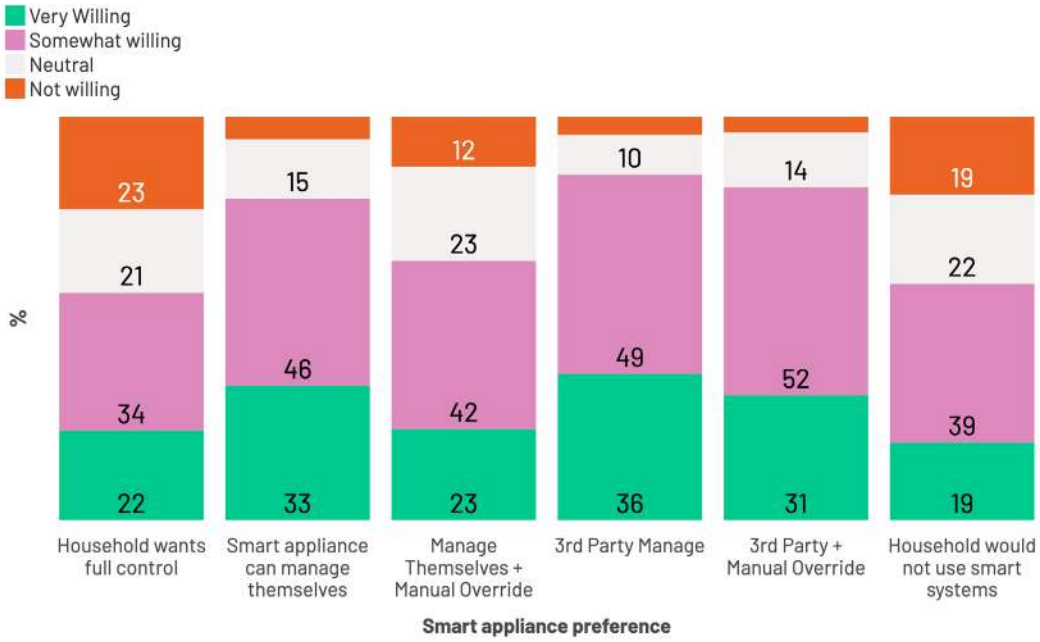
SFL Q21. Base: households that currently owned or planned to purchase an EV or plug-in hybrid in the next five years (n=1,309)

- Among households that currently used or intended to own an EV or plug-in hybrid in the next five years (n=1309), the most common preference was for smart appliances to manage themselves with manual override (30%, n=395), followed by wanting full control (22%, n=292).
- A further 14% (n=184) favoured a third party with override, while 18% (n=239) selected smart appliances that can manage themselves, 7% (n=91) selected a third party to manage, and 8% (n=107) reported that they would not use automated smart systems.
- Overall, 74% of households (including households that would not use smart systems) indicated they wanted to retain some form of control or override of their smart appliances.

SECTION 3:

FUTURE SMART APPLIANCE AUTOMATION AND V2G: CONNECTED FUTURES

EV households' preferred level of control over smart appliances was associated with their willingness to allow third-party control of EVs for grid support (V2G).[26]



*Base: households that currently owned or planned to purchase an EV or plug-in hybrid in the next five years (n = 1,309), *14 cases missing from analysis.*

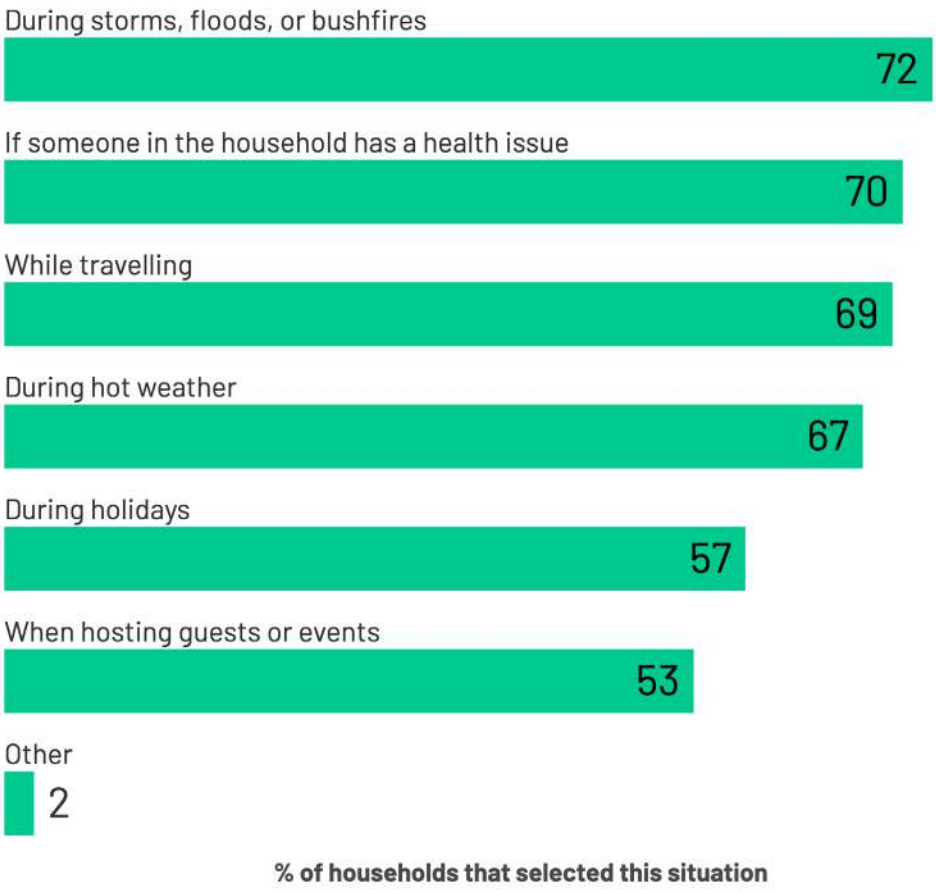
- EV households that wanted full control of smart appliances (n=292) showed the lowest overall enthusiasm for V2G (22% were very willing to participate in V2G, 23% were not willing, and 21% were neutral), highlighting a clear link between desire for household-level control and reluctance to delegate energy decisions externally.
- EV households that did not want to use smart systems (n=107) were among the least receptive to V2G (19% were very willing, and 19% were not willing to participate in V2G).

26 The association between a household's preferred level of control over smart appliances and their willingness to allow third-party control of EVs for grid support was statistically significant: $x^2(15, n = 1,295) = 94.67, p < .001$. Cramér's V = .156, indicating a moderate association.

Overriding smart appliance automation: safety, comfort, and health as key priorities

While households were generally open to automation, many indicated they would take manual control in situations affecting safety, comfort, health, or special circumstances.

- Among all households that were comfortable with smart appliances provided they could override them manually (28%, n=1390), the most common situations where they would want to take manual control involved extreme weather or emergencies.
- Over seven in ten (72%, n=999) indicated they would override automation during storms, floods, or bushfires, and 70% (n=967) indicated they would do so if someone in the household had a health issue.
- Other popular situations for taking control over automated appliances included while travelling (69%, n=956) and during hot weather (67%, n=925).
- More than half of respondents said they would override settings during holidays (57%, n=798) or when hosting guests or events (53%, n=743).



SFL Q22. Base: households that were comfortable with smart appliances provided they could override them manually (n = 1,390). Multiple selections.

Key implications: desire for manual control shapes automation futures

Australia's demand response for appliances is built around the AS/NZS 4755 standards, which set out how devices like air conditioners, pool pumps, and hot water systems must respond to external control signals.

Programs such as Queensland's PeakSmart use these standards with Demand Response Enabling Devices (DREDs) to reduce appliance power use during peak events, offering rebates for participation. While effective in easing grid stress, challenges remain: many appliances are designed to global standards that do not neatly align with AS 4755, DREDs add cost and complexity, and household use depends on maintaining comfort and clear benefits.

Overall, Australia is advancing demand response, and while uptake and integration remain limited by design and market constraints, the results of this survey highlight emerging challenges for future demand response–enabled devices.

Manual control and override functions are central to desired automation futures, but pose potential risks to grid stability.

- Most households supported some level of automation but valued the ability to retain control or override automation, particularly during emergencies, health needs, or special circumstances.
- Future programs aimed at enrolling households in automation are likely to increase participation if they offer some form of control or override.
- Industry forecasting and future planning need to consider the impact of mass manual override of large CER and smart appliances on grid stability, particularly during extreme weather events or other geographically coordinated events and emergencies.
- Demand-side programs and initiatives that attempt to reduce mass override during coordinated events may need to be considered to ensure grid stability in a more automated future.

Recognising that smart tech rejection correlates with V2G resistance, tailored engagement or opt-in schemes may be more effective than default or mandatory approaches.

- Early V2G initiatives should aim to prioritise households that already trust automation, as they demonstrated the highest willingness to participate.
- Including override features in V2G policy and program design may increase participation. However, it is crucial to anticipate, plan and prepare for what this may mean in practice for grid stability during emergencies.

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Disparities in energy-related hardship and technology ownership will have direct implications for energy equity and future climate resilience.

Energy-related hardship: young and disadvantaged hit hardest

Over one in three households (38%, n=1898) reported experiencing at least one form of energy-related hardship in the past 12 months.

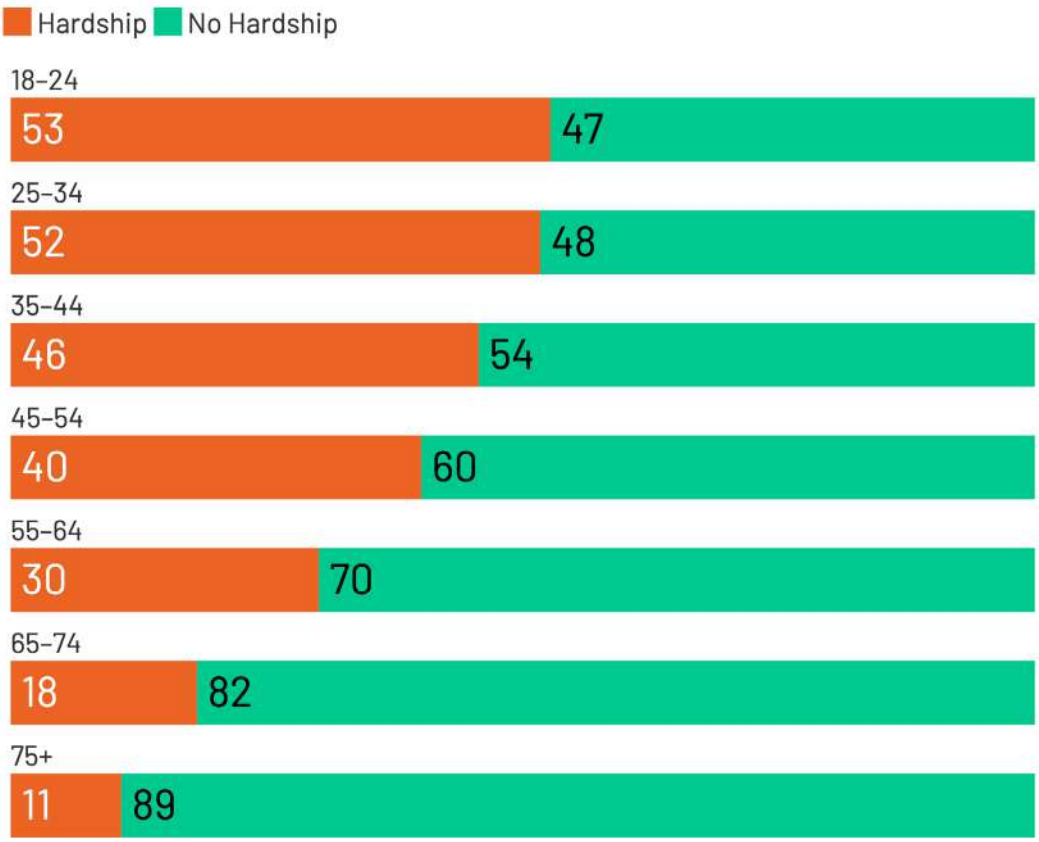
SFL Q42. Multiple selections.

- The most commonly reported experiences included being unable to afford other essentials such as food or housing (15%, n=747) and being unable to pay electricity bills on time (13%, n=650) or not being able to afford to use heating when they needed it (9%, n=441).
- Smaller numbers of respondents had sought help from friends or family (8%, n=408), community organisations (8%, n=397), or had been on a hardship program (9%, n=424) to help pay their electricity bills.
- Notably, 6% (n=319) reported being at risk of disconnection, and 3% (n=158) had their electricity disconnected due to non-payment.

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

The likelihood of experiencing at least one of the above forms of energy-related hardship decreased as age increased.[27]



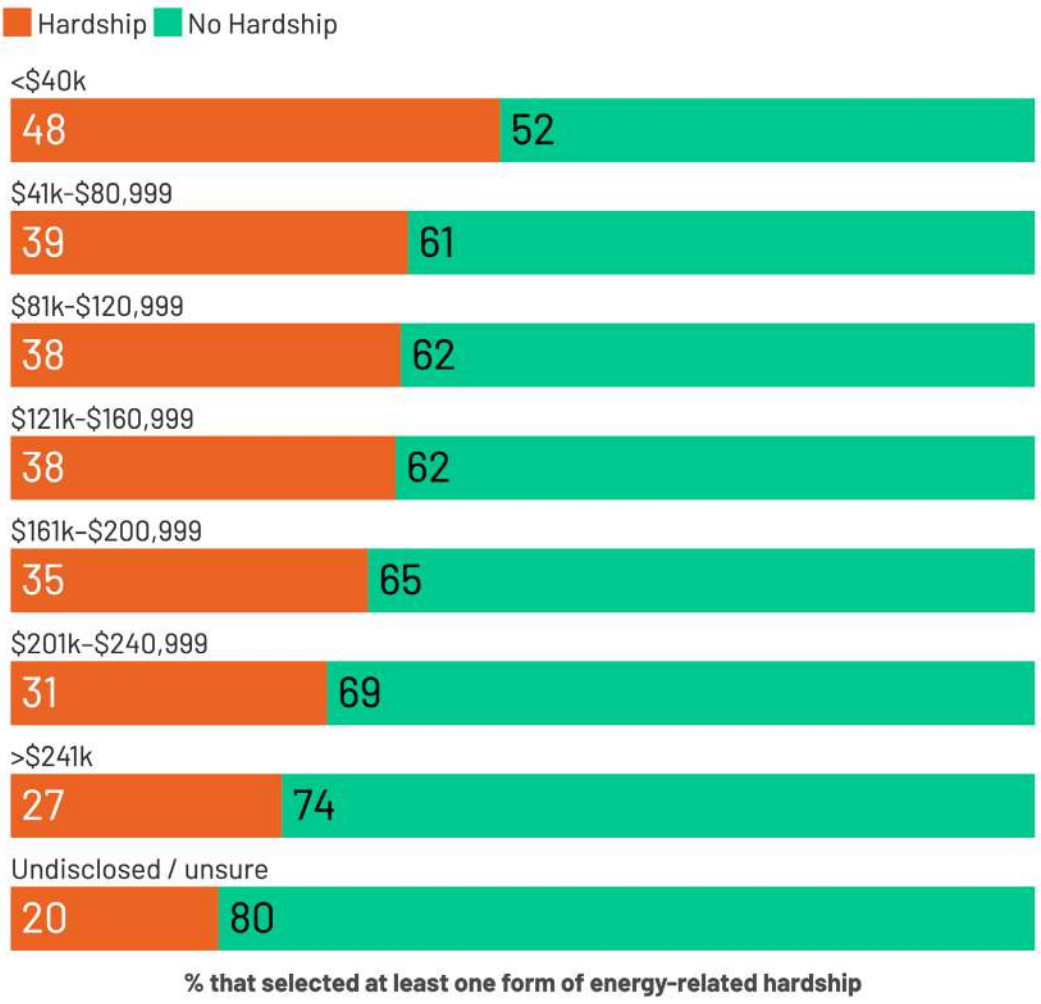
- Younger adults were more likely than older adults to report experiencing an instance of energy-related hardship.
- Over half of those aged 18—24 (53%, n=330) and 25—34 (52%, n=449) had experienced an instance of energy-related hardship, compared with just 11% (n=41) of those aged 75 and over.
- The prevalence of hardship decreased steadily with age, with 18% (n=124) of those aged 65—74 and 30% (n=233) of those aged 55—64 reporting hardship.

27 The association between energy-related hardship and age group was statistically significant: $x^2(6, n = 5012) = 404.54$, $p < .001$. Moderate effect size, Cramer's V = .28.

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

People with lower incomes were more likely to experience energy-related hardship than those with higher incomes.[28]



% that selected at least one form of energy-related hardship

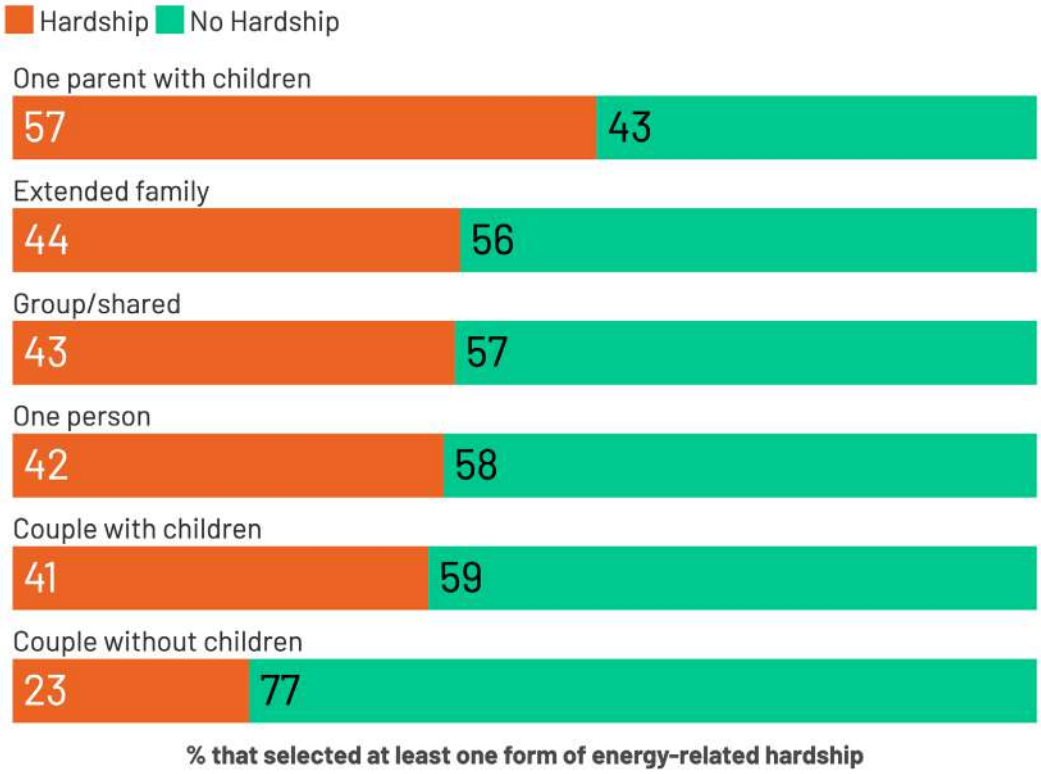
- Experiencing energy-related hardship was highest among those earning less than $40k (48%, n=422) and decreased steadily as income increased, dropping to 27% (n=48) among those earning over $241k.

28 The association between energy-related hardship and income levels was statistically significant: $x^2(7, n = 5012) = 93.68, p < .001$. Small effect size, Cramer's V = .14.

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Household occupant characteristics were associated with energy-related hardship.[29]



- One-parent households reported the highest rate (57%, n=247) of hardship, followed by extended families (44%, n=164) and group/shared households (43%, n=174).
- In contrast, couples without children reported the lowest level of hardship (23%, n=302).

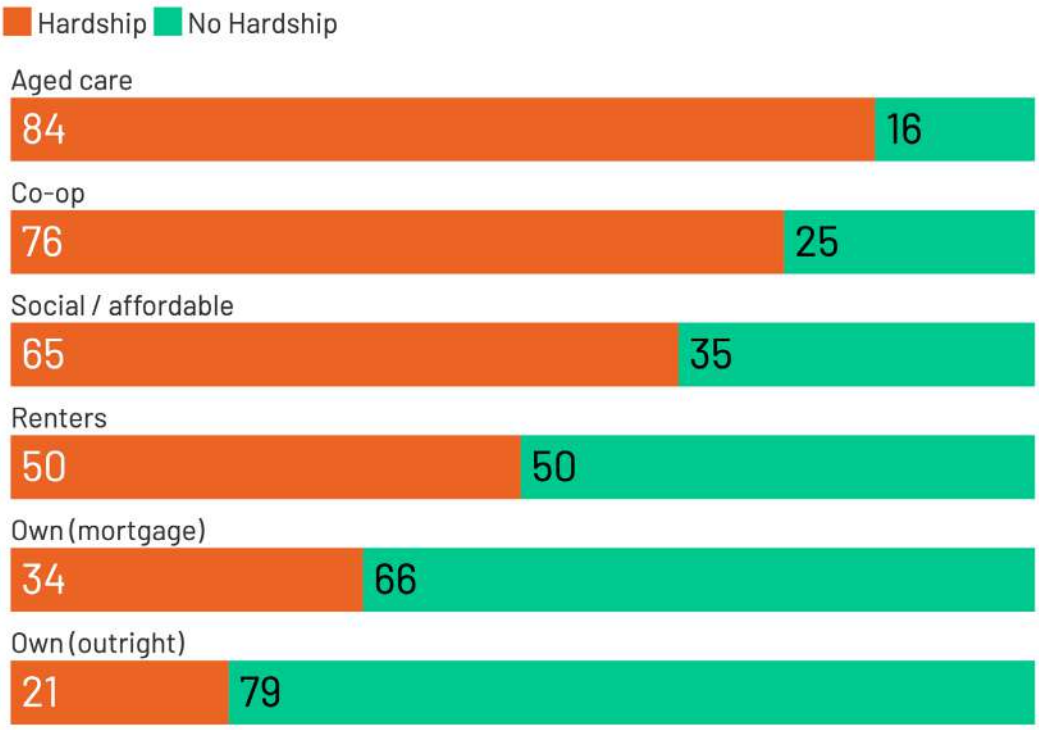
29 The association between energy-related hardship and household occupant characteristics was statistically significant: $x^2(6, n = 4098) = 208.05$, $p < .001$. Small-to-moderate effect size.

Note: "Other" not included in analysis

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Housing tenure was strongly associated with the likelihood of experiencing some form of energy-related hardship.[30]



% that selected at least one form of energy-related hardship

- Hardship was lowest in outright homeowners (21%, n=314) but most prevalent among those in aged care (84%, n=27), cooperative (76%, n=37), and government-assisted housing (65%, n=129).
- Renters reported higher levels of energy-related hardship (50%, n=897) than households with a mortgage (34%, n=472).

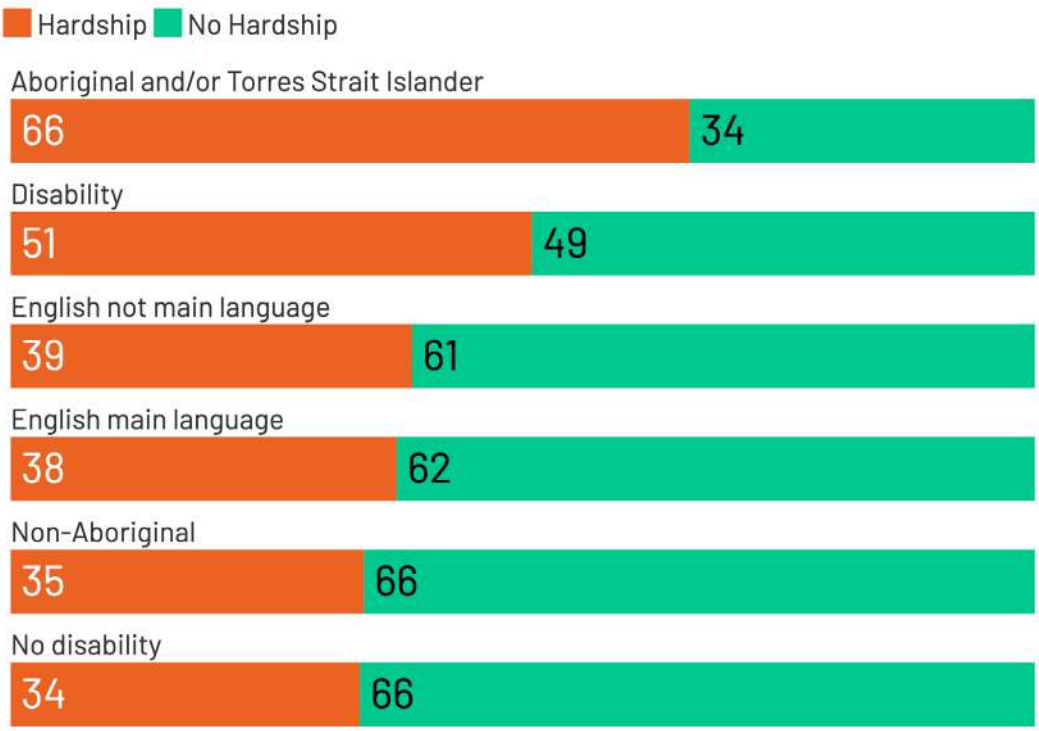
30 The association between energy-related hardship and housing tenure was statistically significant: $x^2(6, n = 5012) = 413.56$, $p < .001$. Moderate effect size, Cramer's V = .29.

Note: "Other" not included in analysis

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Equity group status was associated with marked differences in energy-related hardship. [31]



% that selected at least one form of energy-related hardship

- Aboriginal and/or Torres Strait Islander households reported nearly double the hardship rate (66%) compared to non-Aboriginal households (35%).
- Households where a member was living with a disability (22%, n=1113; no disability, 76%, n=3818; prefer not to say, 2%, n=82) had elevated rates of hardship (51%, n=566) compared with households without a member living with a disability (34%, n=1301).
- Households where English was not the main language (9%, n=441) had an almost identical rate of hardship (39%, n=173) compared with households where English was the main language (91%, n=4549; hardship: 38%, n=1715).

31 The association between energy-related hardship and disability status was statistically significant: $x^2(2, n = 5012) = 103.12$, $p < .001$. Small effect size, Cramer's V = .14. Results omit "prefer not to answer" responses

The association between energy-related hardship and English as the main language was not statistically significant: $x^2(2, n = 5012) = 0.49$, $p = .784$. Effect size, Cramer's V = .01. Results omit "prefer not to answer" responses

The association between energy-related hardship and Aboriginal and/or Torres Strait Islander status was statistically significant: $x^2(3, n = 5012) = 194.00$, $p < .001$. Small-to-moderate effect size, Cramer's V = .20. Results omit "prefer not to answer" and "don't know" responses.

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Energy hardship was heavily associated with the interaction of income and housing tenure, with renters dominating hardship at low and middle incomes and mortgaged households in higher income ranges.[32]

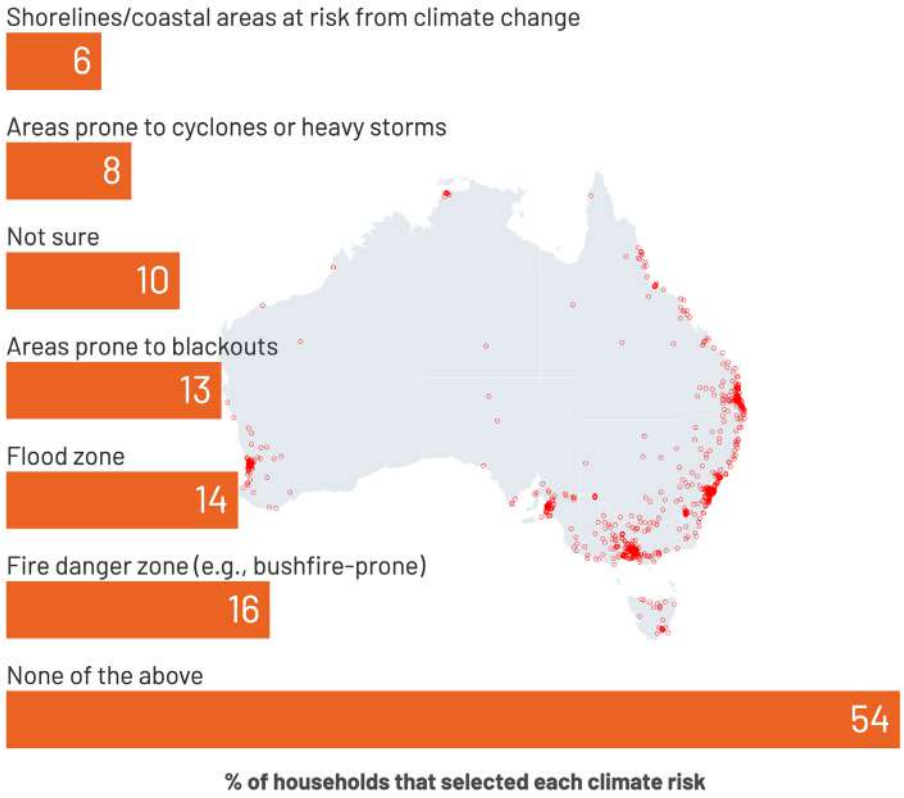
- At incomes below $80k, experiences of hardship were most prevalent among renters, with over half of hardship cases in these groups coming from rental households. Owners (both outright and with mortgage) reported far lower instances of hardship in comparison.
- Mortgaged households carried the largest share of hardship in the $160—240k range, suggesting that energy stress is linked to broader mortgage and housing cost stress from rising interest rates and energy-intensive lifestyles.
- In the $241k+ income group, a small number still reported hardship. However, this would likely be due to lifestyle or household-size factors rather than income or housing status alone.

32 The association between energy-related hardship, income group and housing tenure was statistically significant: $x^2(6, n = 5018) = 414.30, p < .001$. Moderate effect size, Cramer's V = .29.

Climate risks deepen energy hardship

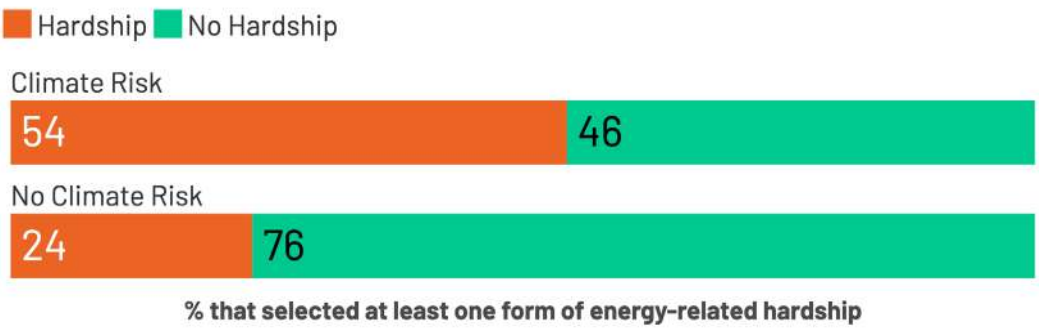
More than a third of households (36%, n=1804) identified their home as being located in an area that is vulnerable to at least one climate-related risk.

Households were asked if they lived in an area that is subject to at least one climate-related risk. The most commonly reported risks were bushfire-prone areas (16%, n=794), flood zones (14%, n=698), and areas prone to blackouts (13%, n=645). Smaller proportions lived in coastal areas at risk (6%, n=284) or cyclone/storm-prone regions (8%, n=375), while 10% (n=523) were unsure about their climate risk exposure.



SFL Q47. Note: the background image illustrates locations of households living in areas subject to a climate-related risk

We found that risks associated with energy-related hardship were compounded by self-reported climate risk vulnerabilities.



Among those respondents who reported their homes faced climate-related risk or were unsure (46%, n=2327), more than half (54%, n=1265) reported experiencing hardship. In contrast, of those not at risk (54%, n=2686), 24% (n=633) reported hardship.

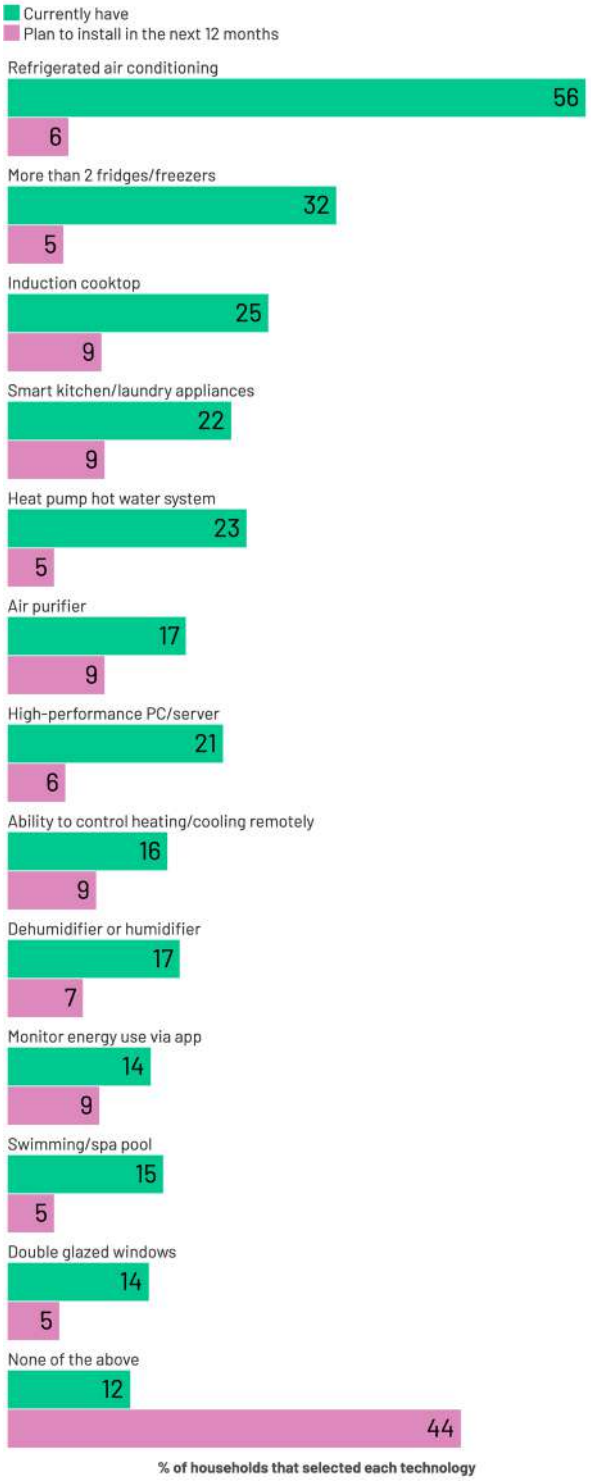
SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Twelve per cent of households reported having no current or emerging technologies from a list provided, highlighting that more than one in ten Australian households face limited opportunities to participate in demand response initiatives, reduce their energy demand, and improve their health and comfort outcomes.

Technologies in the home: 1 in 10 households left out

Households were asked about some current and emerging technologies that have been found in past projects to be significant in supporting better health and comfort outcomes, improving opportunities to participate in demand response programs, or helping households reduce their energy bills. The survey asked if households already had these technologies at their home and their intentions to purchase or install technologies in the coming 12 months.



SFL Q7&8. Multiple selections.

SECTION 4:

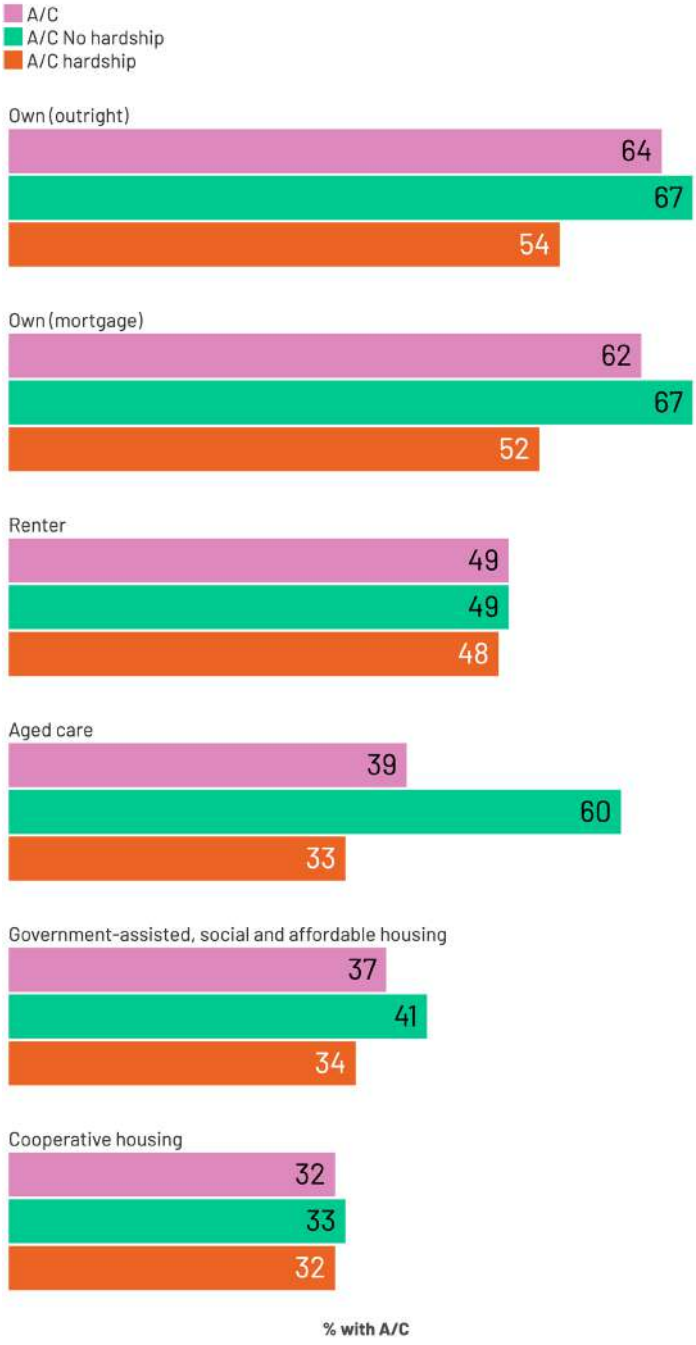
HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

- Current ownership of technologies such as induction cooktops (25%, n=1267), heat pump hot water systems (23%, n=1163), and energy monitoring apps (14%, n=696) pointed to uneven levels of digital and electrification readiness across households.
- Overall, the intention to install technologies in the next 12 months was modest, with no single item exceeding 10% planned ownership. Air purifiers (9%, n=470), smart appliances (9%, n=472), and induction cooktops (9%, n=454) were the most commonly selected technologies for future use.
- A substantial percentage (44%, n=2191) expressed no intention to install any of the technologies in the coming 12 months.
- While over half of respondents reported currently having refrigerated air conditioning (56%, n=2814), 44% (n=2199) did not, indicating a wide variation in access to home cooling.

Photo by Izumi Barton on Unsplash

Keeping cool: air conditioning inequities in a hotter future

Unequal access to refrigerated air conditioning existed across different types of households. Households self-reporting hardship were less likely to have air conditioning than those not in hardship.

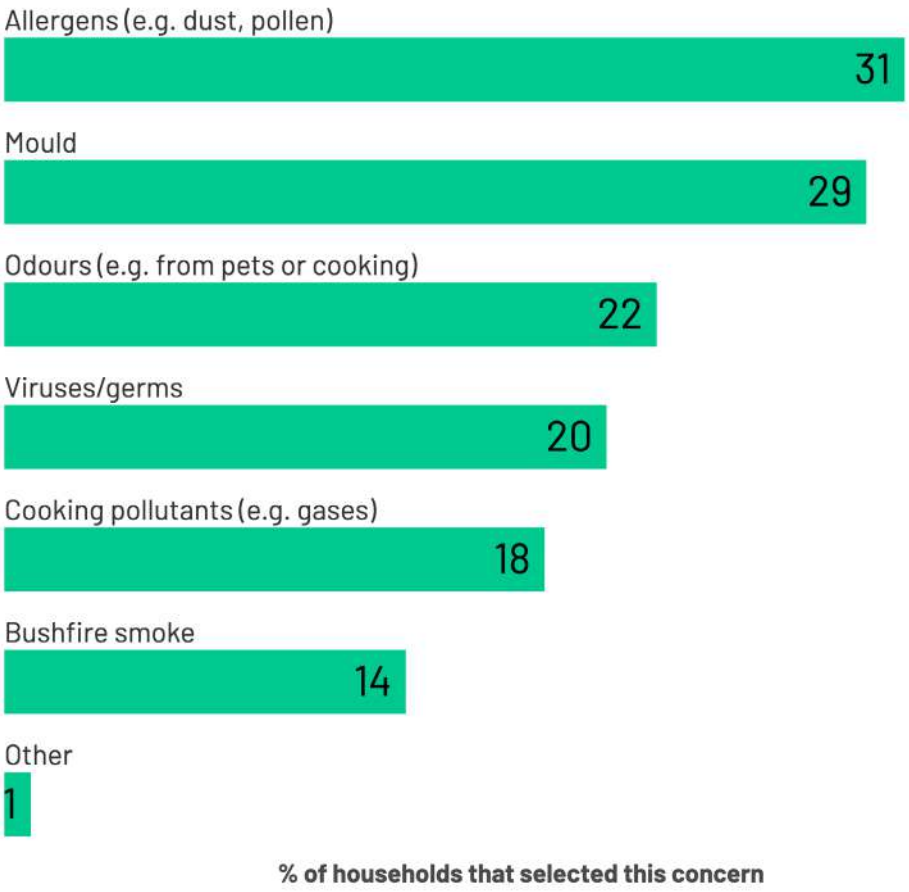


Base: Households that did not select refrigerated air conditioning in SFL Q7. Note: Households that selected "Other" for housing type (n=87) were excluded from the analysis

- A majority of renters (52%) and those in government-assisted, social, or affordable housing (64%) reported not having air conditioning, compared to 36% of outright homeowners and 38% of mortgage holders.
- The disparity was even more pronounced for residents in cooperative housing (68%) and aged care settings (61%), who did not have access to air conditioning.

Air quality: mixed concerns, natural ventilation preferred

Over half of all households (57%, n=2857) reported having concerns about the air inside their homes. Allergens and mould were the most pressing concerns among these households.



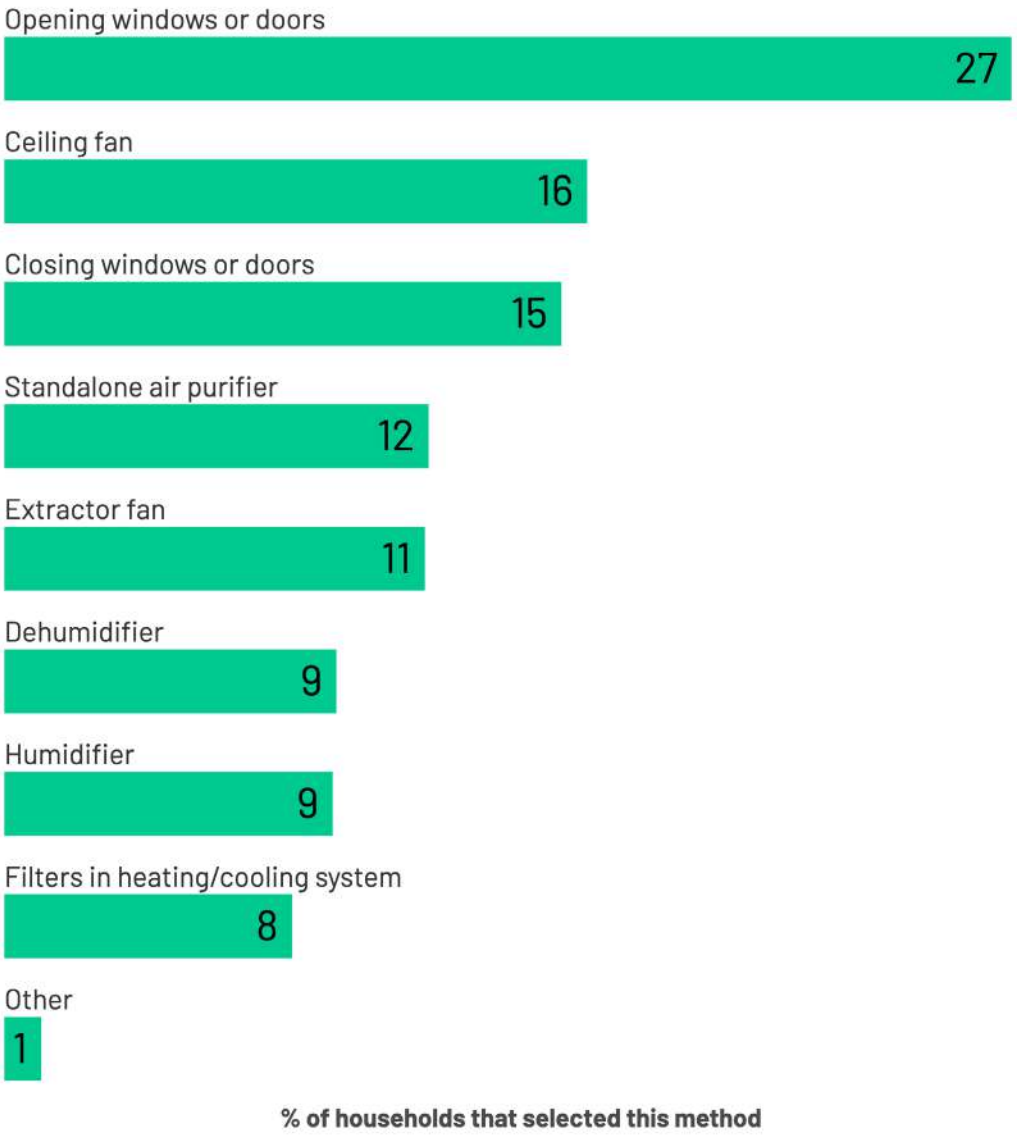
SFL Q25. Multiple selections.

- Allergens such as dust and pollen were the most frequently selected (31%, n=1530), closely followed by mould (29%, n=1466).
- Odours, whether from pets, cooking, or other sources, were also a concern (22%, n=1108).
- Health-related worries also featured, with 20% (n=1023) mentioning viruses or germs and 18% (n=917) citing cooking-related pollutants such as gases.
- Environmental factors, including bushfire smoke, were raised by 14% (n=682), while a small proportion (1%, n=47) mentioned other issues such as outdoor air pollution, chemical exposure, and pests.

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

We asked households what they did to improve or control indoor air conditions. There was a strong preference for natural ventilation to improve or control indoor air conditions.



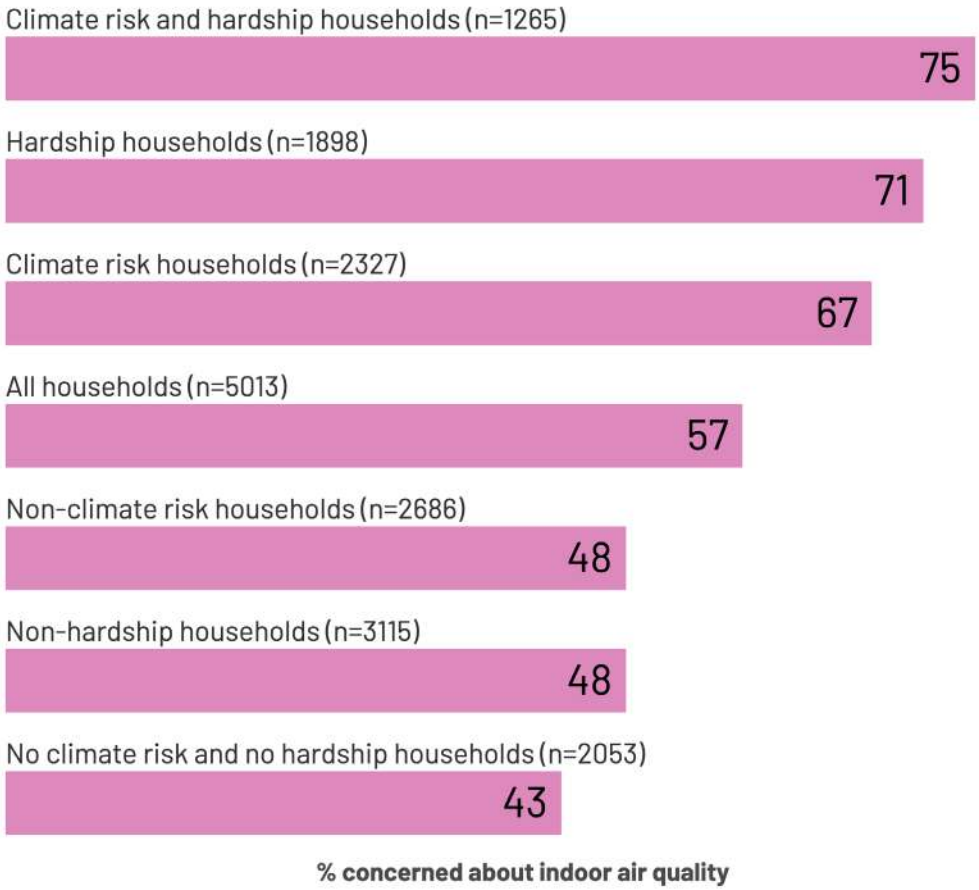
SFL Q27. Multiple selections. Base: Households that selected yes to managing air quality in their homes.

- The most common approach to improving or controlling indoor air conditions was opening windows or doors (27%, n=1370).
- Closing windows or doors was also selected (15%, n=757).
- Other popular methods included using ceiling fans (16%, n=792), standalone air purifiers (12%, n=576), and extractor fans (11%, n=571).
- Some households employed humidity control strategies, using dehumidifiers (9%, n=452) and humidifiers (9%, n=445).
- Filtration systems in heating or cooling systems were also selected (8%, n=393).

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Households facing climate risks[33], hardship, or both were more concerned about air quality than those without these challenges.



33 The total accounts for households who were unsure whether their homes faced climate-related risks (n=523)

SECTION 4:

HARDSHIP AND ACCESS INEQUITIES: WEAK POINTS FOR RESILIENCE

Key implications: technology gaps, hardship, and climate resilience

In the context of intensifying climate pressures and a policy focus on electrification and demand flexibility, the results suggest a need for greater attention to accessibility, affordability, and the varying capacity of households to participate in the energy transition.

Over 1 in 3 households reported hardship; however, energy hardship is widespread and uneven.

- The highest rates of energy-related hardship were among young adults, low-income groups, renters and those in insecure housing, one-parent households, and Aboriginal and Torres Strait Islander households. However, hardship rates remained high across all income brackets, signalling that cost of living concerns are widely affecting households.
- The results show how energy hardship is heavily shaped by the interaction of income and housing tenure, affecting middle-income households just as much as low-income renters. At lower incomes, renters dominated hardship, reflecting well-known vulnerabilities around affordability, insecure housing, and limited ability to make energy efficiency improvements. At middle to higher incomes, however, hardship was not confined to renters, illustrating how energy stress can be linked to broader mortgage or housing cost stress.

Climate risks compound vulnerability.

- Households that reported living in an area vulnerable to bushfire, flood, or frequent blackouts were more than twice as likely to also experience energy-related hardship. While this data is self-reported, the correlation indicates at least a perception of compounding financial and climatic vulnerability that is likely to create challenges for adaptation and resilience.

Unequal access to thermal comfort technologies.

- Renters, social housing residents, cooperative housing, and aged care households were significantly less likely than homeowners to have refrigerated air conditioning, leaving them more exposed to heat-related risks. Structural barriers such as tenure insecurity, limited retrofit authority, and income constraints restrict access to solutions like insulation, double-glazing, or efficient cooling. Without intervention, access to healthy, safe and comfortable air will increasingly become a marker of inequality under changing climate conditions.

Over one in ten households lack key technologies that enable participation in demand response or electrification.

- Despite being widely known and available, only 14% of households reported having double-glazed windows and 23% a heat pump hot water system. Better incentives or subsidies are needed to expand access to energy-related technologies and services to ensure future grid stability and more equitable participation in the energy transition.

Air quality management is uneven.

- While half of households expressed concerns about indoor air quality (dust, mould, smoke, pollutants), many relied on simple, low-cost methods such as opening windows that may become less effective over time under changing climate conditions and emerging health concerns.
- The correlation between air quality concerns, climate risk and hardship indicates potentially heightened future vulnerabilities for households under climate change, which requires further investigation and intervention.

NEXT STEPS

The findings presented in this report are part of a longitudinal evidence base being developed and delivered as part of the Scenarios for Future Living project.

The intention is to run this national survey again in Q2 2026 and Q2 2027 to track these trends over time and to use these findings to inform the ethnographic research, scenarios, qualitative research, living labs, speculative designs, foresighting, and modelling and tool development being delivered across the project's seven work packages.

In turn, subsequent iterations of this survey will be informed by the research from other work packages and consultation with our partners and Industry Reference Group to ensure ongoing relevance and targeted findings which support the project's objectives.

Photo by Martin David on Unsplash

APPENDIX

SURVEY QUESTIONS

I am 18 or over and consent to participate

Yes	1	
No	2	TERMINATE

GAS

PLEASE ANSWER THE FOLLOWING QUESTIONS BASED ON YOUR MAIN PLACE OF RESIDENCE — THE HOME WHERE YOU LIVE MOST OF THE TIME. IF YOU HAVE MORE THAN ONE HOME, FOCUS ON THE ONE YOU CONSIDER YOUR PRIMARY RESIDENCE.

ASK ALL

Q.1. **Are you considering replacing one or more gas appliances (e.g., heating, cooking) in the next 5–10 years?**

SINGLE RESPONSE

Yes	1
No	2
Have already replaced	3
No gas appliances to replace	4
Unsure	5

ASK IF **Q.1** = CODES 2 (No)

Q.2. **What is the main reason you are *not* replacing gas appliances with electric ones?**

SINGLE RESPONSE

Financial	1
Preference for gas	2
Not feasible (e.g., renting)	3
Don't care	5
Other (please specify): _____	6

ASK IF Q.1 = CODES 1 OR 3 (CONSIDERING REPLACING OR HAVE ALREADY REPLACED)

Q.3. **What is the main reason you [IF Q.1 = 1: "are considering replacing"; IF Q.1 = 3: "have already replaced"] gas appliances with electric ones?**

SINGLE RESPONSE

Environmental concerns	1
Cost of gas	2
Health concerns	3
Gas is/was being phased out in my area	4
Other (please specify): _____	5

WORK

ASK ALL

Q.4. **How many days per week does the person in your household who works from home the most usually do so (paid work, excluding home-based businesses)?**

SINGLE RESPONSE

1-2 days	1
3-4 days	2
5+ days	3
None	4
Unsure	5

ASK ALL

Q.5. **Do you or does anyone in your household operate a business from your home (a home-based business)?**

Yes	1
No	2

ASK IF Q5 = 1 (YES)

Q.6. **What best describes your home-based business? (If multiple apply, select the closest match to your primary activity.)** SINGLE RESPONSE

- Freelance Services (e.g., writing, graphic design, web development)
- Consulting (e.g., business, marketing, IT, coaching)
- E-commerce or Online Retail (e.g., selling handmade goods, dropshipping, reselling products)
- Daycare Services (e.g., home daycare for children, older people, pets)
- Personal Services (e.g., tutoring, fitness coaching, beauty services like hairdressing)
- Creative or Artistic Work (e.g., photography, crafting, music lessons)
- Food-Based Businesses (e.g., home baking, catering, small-scale food production)
- Farming and Agriculture (e.g., small-scale farming, gardening, beekeeping, raising poultry)
- Repair or Maintenance Services (e.g., tech repair, sewing/alterations)
- Content Creation (e.g., blogging, podcasting, YouTube channels)
- Professional Services (e.g., accounting, virtual assistance, tax preparation)
- Other

Technologies

ASK ALL

Q.7. **Which of the following do you have at your home? Select all that apply. Leave blank if unsure.** MULTIPLE RESPONSE; RANDOMISE

☐ Air purifier (contaminants)	1
☐ Dehumidifier or humidifier (moisture)	2
☐ Refrigerated air conditioning (e.g., reverse cycle air conditioner)	3
☐ More than 2 fridges or freezers	4
☐ Swimming pool or spa pool	5
☐ High-performance PC or server (e.g. for gaming, crypto-mining, running algorithms)	6
☐ Induction cooktop (installed or plug-in)	7
☐ Ability to control heating and/or cooling remotely (via app)	8
☐ Ability to monitor energy consumption via portal or app (e.g., Emberpulse, Powerpal)	9
☐ Smart kitchen/laundry appliances (e.g., internet-connected fridge, oven, washing machine, dryer)	10
☐ Heat pump hot water system	11
☐ Double glazed windows	12
☐ None of the above	13

ASK ALL EXCEPT THOSE THAT SELECTED Q7= ALL OPTIONS EXCEPT 12 (NONE OF THE ABOVE)

Q.8. **Do you intend to purchase or install these technologies in the next 12 months?** ASK ONLY ITEMS FOR WHICH Q7 = UNSELECTED

MULTIPLE RESPONSE

☐ Air purifier (contaminants)	1
☐ Dehumidifier or humidifier (moisture)	2
☐ Refrigerated air conditioning (e.g., reverse cycle air conditioner)	3
☐ More than 2 fridges or freezers	4
☐ Swimming pool or spa pool	5
☐ High-performance PC or server (e.g. for gaming, crypto-mining, running algorithms)	6
☐ Induction cooktop (installed or plug-in)	7
☐ Ability to control heating and/or cooling remotely (via app)	8
☐ Ability to monitor energy consumption via portal or app (e.g., Emberpulse, Powerpal)	9
☐ Smart kitchen/laundry appliances (e.g., internet-connected fridge, oven, washing machine, dryer)	10
☐ Heat pump hot water system	11
☐ Double glazed windows	12

ASK ALL

Q.9. **Which of the following statements apply to your home? (Select all that apply)**

MULTIPLE RESPONSE; RANDOMISE

☐ Devices are controlled via app or voice assistant (e.g. Alexa, Siri, Google Home)

☐ Connected to a micro-grid, community battery, 'virtual power plant' or 'peer-to-peer' electricity trading (e.g. via Reposit, Power Ledger, Evergen, Redback Technologies)

☐ Described as a 'smart home' (by yourself or others)

☐ None of these apply

SURVEY QUESTIONS

ASK ALL

Q.10. Which of the following best describes each of these technologies in relation to your home?

SINGLE RESPONSE PER ROW; RANDOMISE

		Currently use	Plan to get in the next 5 years	Plan to get in 5+ years	No plans to own	Unsure
1	Rooftop solar	1	2	3	4	5
2	Home battery	1	2	3	4	5
3	Electric vehicle (EV) or Plug-in Hybrid (not including bicycles)	1	2	3	4	5

ASK IF Q.10_2 (HOME BATTERY) = CODES 1 OR 2 (YES OR PLAN TO IN NEXT 5 YEARS)

Q.11. Which best describes how you [if Q10_2 = 2: "plan to"] operate your home battery?

MULTIPLE RESPONSE

- Not sure how it operates 1
- Set to maximise use of my own solar (minimise grid use) 2
- Set to minimise total energy cost 3
- Set to keep its level of charge within a certain range 4
- Set to stay fully charged 5
- Remotely managed as part of a 'Virtual Power Plant' (group of connected homes or devices that work together to support the electricity grid) 6
- Set to use for power outages 7
- No particular pattern or routine 8
- Other (please specify): _____ 9

ASK IF Q.10_3 (ELECTRIC VEHICLE OR HYBRID) = CODES 1 OR 2 (YES OR PLAN TO IN NEXT 5 YEARS)

Q.12. Why did you [if Q.10_3 = 1: get / if Q.10_3 = 2: intend to get] an electric or plug-in hybrid vehicle? Please rank the top 3 reasons that [if Q.10_3 = 1: were / if Q.10_3 = 2: are] most important to you.

RANDOMISE; RANK TOP 3

☐ Environmental benefits 1
☐ Lower running costs 2
☐ Speed and acceleration 3
☐ Appeal of new or innovative technology 4
☐ Automated driving features 5
☐ Comfort and safety 6
☐ Other (please specify): _____ 7
☐ Don't know; I wasn't the decision maker 8

ASK IF Q.10_3 (ELECTRIC VEHICLE OR HYBRID) = CODES 1 OR 2 (YES OR PLAN TO IN NEXT 5 YEARS)

Q.13. **[If Q.10_3 = 1] How do you primarily charge your electric or plug-in hybrid vehicle?**
[If Q.10_3 = 2] How do you plan to primarily charge your electric or plug-in hybrid vehicle?

SINGLE RESPONSE; RANDOMISE

- Regular three-pin power point at home (Level 1)
- Dedicated home charger (Level 2, automated to respond to price or solar availability)
- Dedicated home charger (Level 2, not automated)
- Public fast charger (paid)
- Public fast charger (free)
- Private fast charger in public space (e.g., workplace or fleet station)
- Other (please specify): _____

ASK IF Q.10_3 (ELECTRIC VEHICLE OR HYBRID) = CODES 1 OR 2 (YES OR PLAN TO IN NEXT 5 YEARS)

Q.14. **[If Q.10_3 = 1] Which of the following best describes how you prefer to charge your electric or plug-in hybrid vehicle?**

[If Q.10_3 = 2] Which of the following best describes how you would prefer to charge your electric or plug-in hybrid vehicle?

SINGLE RESPONSE; RANDOMISE

- Keep my EV fully charged when possible
- Charge when it's most convenient for me
- Charge in the least expensive way (e.g., using my own solar or during off-peak times)
- Charge using renewable electricity
- I don't have a preference or don't know
- None of these

Q.15. **How willing would you be to allow a third party to control your electric vehicle to supply electricity back to the grid during periods of high demand (i.e., through vehicle-to-grid technology)?**

SINGLE RESPONSE

- Very willing
- Somewhat willing
- Neutral
- Not willing

Demand Management and Load Shifting

Ask all

Q.16. **On a typical hot weekday, at what time are the following activities usually done in your household? (Select one per row; if the time varies, choose the most common.)**

SINGLE RESPONSE PER ROW; RANDOMISE

		6am-10am	10am-3pm	3pm-8pm	8pm-6am	Varies too much	Nearly always	Not applicable
1	IF Q.7 = 3: Use refrigerated air conditioning (cooling)	1	2	3	4	5	6	7
2	IF Q.7 = 5: Run pool pump or heater	1	2	3	4	5	6	7
3	IF Q.10_3 = 1: Charge electric vehicle	1	2	3	4	5	6	7
4	Use dishwasher	1	2	3	4	5	6	7
5	Use washing machine	1	2	3	4	5	6	7
6	Use clothes dryer	1	2	3	4	5	6	7
7	Shower or bathe	1	2	3	4	5	6	7
8	Cook with electric appliances	1	2	3	4	5	6	7

ASK ALL

Q.17. **How easy or difficult would it be to shift each of these to the middle hours of the day (when solar power is most available)? ONLY SHOW ITEMS FROM Q.16 FOR WHICH THE RESPONSE WAS NOT CODE 7 (NOT APPLICABLE IN MY HOUSEHOLD)**

SINGLE RESPONSE PER ROW

		Very difficult	Difficult	Neither	Easy	Very easy	Don't know
1	IF Q.7 = 3: Use refrigerated air conditioning (cooling)	1	2	3	4	5	6
2	IF Q.7 = 5: Run pool pump or heater	1	2	3	4	5	6
3	IF Q.10_3 = 1: Charge electric vehicle	1	2	3	4	5	6
4	Use dishwasher	1	2	3	4	5	6
5	Use washing machine	1	2	3	4	5	6
6	Use clothes dryer	1	2	3	4	5	6
7	Shower or bathe	1	2	3	4	5	6
8	Cook with electric appliances	1	2	3	4	5	6

ASK IF CODE 1 OR 2 (VERY DIFFICULT OR DIFFICULT) FOR ANY ITEMS AT Q.17

Q.18. **What would make this difficult? (Rank your top 3 reasons by importance.)**

RANDOMISE; RANK 3 RESPONSES

- ☐ I'm not home at that time
- ☐ The hot weather
- ☐ Doesn't fit with other responsibilities (i.e., caring for others, minimising noise)
- ☐ Hard to plan when I'll need the appliances
- ☐ I'd forget to load or program them
- ☐ I need to do tasks when it's convenient for me
- ☐ I usually do multiple key tasks at once
- ☐ I have other priorities during the day
- ☐ I don't think timing should matter for electricity use
- ☐ Other (please specify): _____

ASK ALL

Q.19. **During times of very high energy demand (e.g., extreme heat when many people use air conditioning), energy providers or community groups may ask households to reduce their electricity use for a short period.**

Please rank 3 of the following reasons in order of importance for why you would reduce energy use in your home.

RANDOMISE RESPONSES [RANK TOP 3]

I would not reduce my energy use [anchor; if selected, move on to next question, i.e., no need to complete ranking]	1
To get a financial bonus on my energy bill	2
To receive a fun reward (e.g. movie, meal, or pool voucher)	3
To help the environment	4
To help reduce stress on the electricity grid	5
To help prevent a power outage in my home or community	6
To ensure older or unwell households can stay cool	7
To educate children about using energy wisely	8
To respond to the challenge or compete with others	9
To have a donation made on my behalf to a charity or community group	10
Other (please specify): _____	11
• Unsure	11

ASK ALL

Q.20. **During an afternoon when there is abundant solar energy being produced in your neighbourhood, would you be willing to *increase* your energy use to help stabilise the grid?**

SINGLE RESPONSE; RANDOMISE RESPONSES

- Yes, but only if I was offered a financial incentive 1
- Yes, even if I was not offered a financial incentive 2
- Yes, if I thought it would benefit my community 3
- No, I would not increase my energy use 4
- Other (please specify): _____ 5
- Unsure 6

Ask if Q.20 = 1: [yes], but only if I was offered a financial incentive
Please select all applicable financial incentives:

MULTIPLE RESPONSE

Discounted electricity	1
Free electricity	2
Payment received	3

ASK ALL

Q.21. **In the near future, appliances like hot water systems, EV chargers, and pool pumps may be set to run automatically when electricity is cheaper or greener. They could manage themselves (if 'smart') or be controlled by in-home systems such as energy management platforms or AI assistants. These systems may also respond to signals from external providers to take advantage of lower electricity prices or periods of high renewable energy availability. Critical appliances, such as life support equipment, would not be affected.**

How would you use smart appliances? (Select the option that best reflects your preference.)

SINGLE RESPONSE; RANDOMISE RESPONSES

- I want full control and scheduling of smart systems and appliances myself
- I'm happy for smart appliances or in-home systems to manage themselves
- I'm happy for smart appliances or in-home systems to manage themselves, provided I can manually override them
- I'm happy for a third party to manage smart appliances
- I'm happy for a third party to manage smart appliances, provided I can manually override them
- I would not use smart systems or appliances that can be managed automatically

ASK IF Q.21 = CODE 2 (HAPPY FOR SMART APPLIANCE TO BE AUTOMATED IF I CAN OVERRIDE MANUALLY)

Q.22. **In which of the following situations would you want to override smart or automated appliances? (Select all that apply)**

MULTIPLE RESPONSE; RANDOMISE RESPONSES

☐ During hot weather	1
☐ During storms, floods, or bushfires	2
☐ While travelling	3
☐ When hosting guests or events	4
☐ During holidays	5
☐ If someone in the household has a health issue	6
☐ Other (please specify): _____	7

SPACE

ASK ALL

Q.23. **Have you converted an additional area on your property (e.g., shed or garage) into a living or recreational space in the last 5 years?**

SINGLE RESPONSE

Yes	1
No	2

ASK Q.23 = CODE 1 (YES)

Q.24. **Which of the following have you added to the converted space?**

MULTIPLE RESPONSE; RANDOMISE

• Electric Heater	1
• Air conditioning (split-system or portable cooler)	2
• Television	3
• Refrigerator	4
• Computer	5
• Exercise equipment	6
• Lights	7
• Insulation	8
• Other electronic devices	9
• I haven't added any of these to the converted space	10

ASK ALL

Q.25. Are you concerned about any of the following in the air of your home?

MULTIPLE RESPONSE; RANDOMISE

• I am not concerned about the air in my home [ANCHOR]	1
• Allergens (e.g. dust, pollen, etc.)	2
• Odours (e.g. from a pet or cooking)	3
• Bushfire smoke	4
• Cooking pollutants (e.g., odours or gases)	5
• Mould	6
• Viruses/germs	7
• Other (please specify): _____	8

ASK ALL

Q.26. Do you do anything to manage the air quality in your home?

SINGLE RESPONSE

Yes	1
No	2

ASK IF Q.26 = CODE 1 (YES)

Q.27. What do you do to manage the air quality in your home?

MULTIPLE RESPONSE; RANDOMISE

• Standalone air purifier	1
• Filters for purification installed into heating or cooling system	2
• Opening windows or doors	3
• Closing windows or doors	4
• Dehumidifier	5
• Humidifier	6
• Ceiling fan	7
• Extractor fan	8
• Other (please specify) [insert textbox]	9

ASK ALL

Q.28. **Please rank the following according to how well it describes your household's priorities or values (drag/move the options into your preferred order):**

RANDOMISE

Fun and entertainment	1
Comfort, health and safety	2
Convenience	3
Sustainability	4
Affordability and cost effectiveness	5
Community-centred	6
Don't know / not listed	7

Demographic

Now we'd like to ask a few questions about you to help us analyse the data. Please be assured that your responses will remain anonymous and confidential, and all data will be de-identified once the project is complete.

ASK ALL

Q.29. **Including yourself, how many people live in your household?**

_____[number entry]

ASK IF Q29 = MORE THAN 1

Q.30. **Which of the following best describes your household?**

SINGLE RESPONSE

Couple without children	1
Couple with child(ren)	2
One parent/guardian with child(ren)	3
Extended family household (e.g. multigenerational)	4
Group/shared household	5
Other (please specify): _____	6

ASK ALL

Q.31. **Please select your gender:**

SINGLE RESPONSE

Man	1
Woman	2
Non-binary / gender diverse	3
Prefer not to say	4
Prefer to self-describe	5

ASK ALL

Q.32. What is your age?

SINGLE RESPONSE

18-24	1
25-34	2
35-44	3
45-54	4
55-64	5
65-74	6
75 or over	7
Prefer not to say	8

ASK ALL

Q.33. Which of the following best describes you?

SINGLE RESPONSE

Work full-time	1
Work part-time	2
Work on Casual Basis	3
Unemployed	4
Household duties only	5
Retired (self-supporting)	6
Pensioner	7
Disability pensioner	8
Full-time student	9
Other—please specify	10
Prefer not to say	11

ASK ALL

Q.34. Do you or anyone in your household identify as Aboriginal and/or Torres Strait Islander?

SINGLE RESPONSE

- Yes
- No
- Unsure
- Prefer not to answer

SURVEY QUESTIONS

ASK ALL

Q.35. **With which ethnic group(s) does your household identify?**

MULTIPLE RESPONSE

- Australian
- New Zealander
- Asian
- Indian
- Middle Eastern
- European
- North American
- South American
- African
- Decline to Answer
- Other, please specify [text box]

ASK ALL

Q.36. **Is English the main language spoken in your household?**

SINGLE RESPONSE

Yes	1
No	2
Prefer not to say	3

ASK ALL

Q.37. **Does anyone in your household have a disability?**

SINGLE RESPONSE

- Yes
- No
- Prefer not to say

ASK ALL

Q.38. **What is your household's total annual income before tax? Please include all sources of income for everyone in your household (e.g. wages, investments, government payments, and superannuation).**

SINGLE RESPONSE

Less than $40,000	1
$41,000 - $80,999	2
$81,000 - $120,999	3
$121,000 - $160,999	4
$161,000-$200,999	5
$201,000-$240,999	6
Over $241,000	7
Prefer not to say / unsure	8

SURVEY QUESTIONS

ASK ALL

Q.39. **Who is your energy retailer?**

Drop down:

- **Unsure**
- **1st Energy**
- **ActewAGL**
- **AGL**
- **Alinta Energy**
- **Amber Electric**
- **Ampol Energy**
- **Arcline by RACV**
- **Aurora Energy**
- **Blue NRG**
- **CovaU Energy**
- **Diamond Energy**
- **Dodo Power & Gas**
- **Energy Locals**
- **EnergyAustralia**
- **ENGIE (Simply Energy)**
- **Ergon Energy**
- **GloBird**
- **Horizon Power**
- **Jacana**
- **Kleenheat**
- **Kogan Energy**
- **Lumo Energy**
- **Momentum Energy**
- **Nectr**
- **Next Business Energy**
- **Origin**
- **OVO Energy**
- **Pacific Blue**
- **Powershop**
- **Red Energy**
- **Rimfire Energy**
- **Sumo**
- **Synergy**
- **Tango Energy**
- **Other**

SURVEY QUESTIONS

ASK ALL

Q.40. About how much is your electricity bill, on average, each quarter (every 3 months)?

SINGLE RESPONSE

Less than $300 per quarter (under $100 per month)	1
$300–$600 per quarter ($100–$200 per month)	2
$601–$1200 per quarter ($201–$400 per month)	3
Over $1200 per quarter (over $400 per month)	4
Unsure	5
Prefer not to say	6

ASK ALL

Q.41. What type of electricity pricing do you have with your energy retailer?

MULTIPLE RESPONSE

Flat tariff (same rate at all times)	1
Time-of-use tariff (rates differing by the time of day)	2
Controlled load tariff (e.g., off peak rate for hot water systems)	3
Unsure	4
Other (please specify)_____	5

ASK ALL

Q.42. In the past 12 months, has any of the following happened to you or your household?

[Multiple response; randomise]

☐ Sought financial help from a community or welfare organisation	1
☐ Couldn't pay the electricity bill on time	2
☐ Asked friends or family for help paying the electricity bill	3
☐ Couldn't afford other essentials (e.g., food, rent, mortgage, other bills)	4
☐ Couldn't afford to use heating when needed	5
☐ Had electricity disconnected due to non-payment	6
☐ Was at risk of electricity disconnection	7
☐ Sold or pawned something to pay bills	8
☐ Was on a hardship program due to unpaid electricity bills	9
☐ Experienced a climate-related disaster that resulted in significant damage to my home	10
☐ None of the above	

Q.43. Do you own your home or rent?

SINGLE RESPONSE; RANDOMISE

Own (outright)	1
Own (mortgage)	2

Rent	3
Government-assisted, social and affordable housing	4
Cooperative housing	5
Aged care	6
Other - please specify	7

ASK ALL

Q.44. Please enter your postcode:

_____

Prefer not to say 2

Q.45. What type of dwelling do you live in?

SINGLE RESPONSE; RANDOMISE

Detached house	1
Semi-detached, row or terrace house, townhouse	2
Flat, unit or apartment	3
Other - please specify:_____	4

ASK ALL

Q.46. How many bedrooms does your home have?

SINGLE RESPONSE

None (studio)	1
1	2
2	3
3	4
4	5
5 or more	6

ASK ALL

Q.47. Do you live in an area that is subject to any of the following risks? Please select all that apply:

- Fire danger zone (e.g., areas prone to bushfires or wildfires) 1
- Flood zone (e.g., areas at risk of flooding during heavy rain or storms) 2
- Areas prone to blackouts (e.g., frequent power outages or unreliable electricity supply) 3
- Shorelines or coastal areas under threat from climate change (e.g., rising sea levels, erosion) 4
- Areas prone to cyclones/heavy storms 5
- None of the above 6

Scenarios for
Future Living

monash.edu/scenarios-for-future-living